RCRA PART B PERMIT APPLICATION

FOR THE

IDAHO NATIONAL LABORATORY

Volume 22
Idaho Nuclear Technology and Engineering Center

Calcined Solids Storage Facility

Attachment 1 - Section B
Facility Description

February 2006

CONTENTS

EXHIBITS

B. FACILITY DESCRIPTION

B-1. General Description [IDAPA 58.01.05.012; 40 CFR 270.14(b)(1)]

Although, the Calcined Solids Storage Facility (CSSF) bins are not currently receiving any waste, the Idaho High-Level Waste and Facilities Disposition Final Environmental Impact Statement Record of Decision may select a waste treatment option that would require the use of the bin sets. This permit application would allow the continued use of the Bin Sets 1, 2, 3, 4, and 5 for storage and Bin Sets 6 and 7 for storage and to receive future waste transfers.

This Hazardous Waste Management Act (HWMA)/Resource Conservation and Recovery Act (RCRA) Part B permit application addresses storage of calcine (Process Code S02 – storage in tanks) located at the Idaho Nuclear Technology and Engineering Center (INTEC) at the Idaho National Laboratory (INL). The CSSF includes seven bin sets. The bins are functionally the same and contain calcine, which is a solid stable dry granular mixed waste. The bins are described in detail in Attachment 1 - Section D of this permit application.

The INTEC is located in the south-central portion of the INL in Butte County. The location of this complex on the INL Site is shown in Exhibit B-1. The physical conditions around these buildings are typical for the INL Site, approximately 5,000 ft above mean sea level, as shown on the topographic map, Exhibit B-2. The area is relatively flat and receives little rainfall. However, poor drainage patterns can produce localized flooding during periods of rapid snowmelt and/or heavy rainfall. Due to the lack of rainfall and the poor quality of the surficial soils, the site has little agricultural value. Wind patterns are generally in a northeast/southwest axis, with some seasonal variability.

Appendix 1 of this Part B permit application contains a drawing showing the principal culverts, ditches, and storm systems, and a drawing showing the sanitary waste system at the INTEC. There are no recreation areas present on or adjacent to the INTEC.

Bin Set 1 is contained in a rectangular reinforced concrete vault. Exhibit B-3 provides a cutaway view of CSSF 1. The vault is located underground and founded on bedrock. The vault is approximately 26 ft by 26 ft with a height of 40 ft. The vertical walls of the vault chamber are 2 ft 6 in. thick. Overlying the base slab is a 2-ft-thick concrete foundation that supports the bin radial support beams. The roof consists of three panels, two of which span between the vault walls and pre-cast beams; the third panel spans between the pre-cast beams.

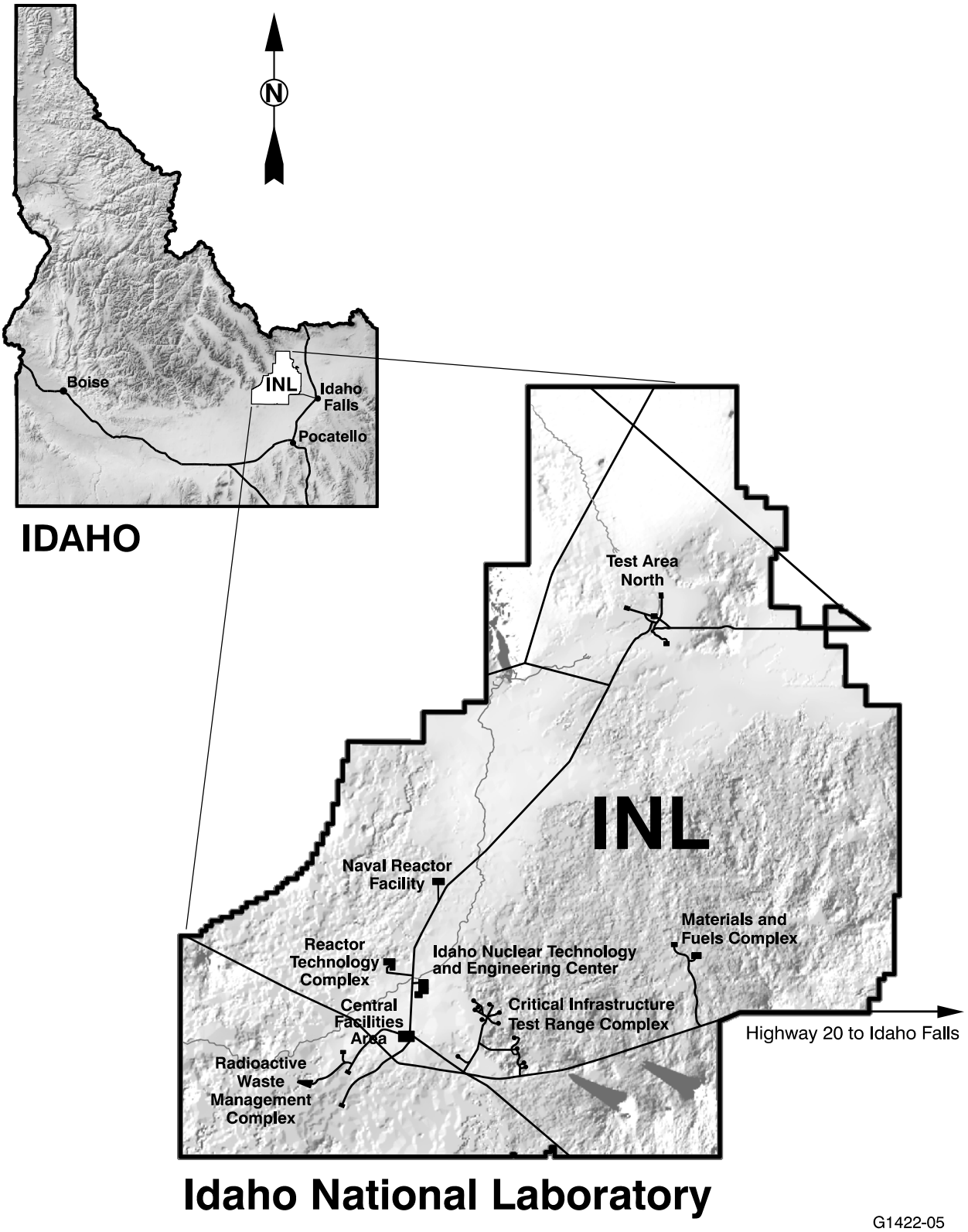

Exhibit B-1. Location of the INTEC on the INL.

Exhibit B-2. Topographic Map of the INTEC.

Bin Set 2 is a cylindrical, reinforced concrete vault that is founded on bedrock and encases the seven bins. Exhibit B-3 provides a cutaway view of CSSF 2. The vault is located predominantly underground, with earth banked up against the aboveground portion. The vault is 62 ft high with a 50-ft diameter. The vault walls are constructed of reinforced concrete measuring 2 ft thick. The concrete floor slab varies in thickness from 3 to 5 ft. The roof is composed of large pre-cast T-beams overlain with a field-poured concrete slab.

Bin Set 3 is contained in a vault that is 67 ft high with a 50-ft diameter and founded on bedrock. Exhibit B-3 provides a cutaway view of CSSF 3. The vault is located predominantly underground with earth banked up against the aboveground portion. The vault walls are constructed of reinforced concrete measuring 2 ft thick. The concrete floor slab varies in thickness from 3 ft to 5 ft. The roof is composed of large pre-cast T beams overlain with a field-poured concrete slab.

Bin Set 4 is contained in a cylindrical, reinforced concrete vault that is located partially underground and founded on bedrock. Exhibit B-4 provides a cutaway view of CSSF 4. The vault is approximately 70 ft high and 36 ft in diameter. The vault floor is a concrete slab measuring 4 ft 6 in. thick. Vault walls are from 2 ft to 3 ft 6 in. thick. The roof is composed of pre-cast, reinforced concrete beams overlain with a field-poured concrete slab.

Bin Set 5 is encased in a cylindrical, reinforced concrete vault that is founded on bedrock. Exhibit B-4 provides a cutaway view of CSSF 5. Approximately half of the vault is located below ground level. The vault is approximately 82 ft high and 55 ft in diameter. The vault floor is a concrete slab measuring 5 ft thick. The vault walls are 4 ft thick. The vault roof is overlain with a field-poured concrete slab supported by pre-cast, reinforced concrete T-beams set on the vault walls.

Bin Set 6 is contained in a cylindrical, reinforced concrete vault that is founded on bedrock. Exhibit B-4 provides a cutaway view of CSSF 6. Approximately half of the vault is located below ground level. The vault is approximately 93 ft high and 52 ft in diameter. The vault floor is a concrete slab measuring 6 ft 6 in. thick. The vault walls are 4 ft thick. Pre-cast, reinforced concrete panel forms support the vault roof that is overlain with a field-poured concrete slab.

Bin Set 7 is contained in a cylindrical, reinforced concrete vault that is founded on bedrock. Exhibit B-4 provides a cutaway view of CSSF 7. Approximately half of the vault is located below ground level. The vault is approximately 94 ft high and 56 ft in diameter. The vault floor is a concrete slab measuring 6 ft 6 in. thick. The vault walls are 4 ft thick. Pre-cast, reinforced concrete panel forms support the vault roof that is overlain with a field-poured concrete slab.

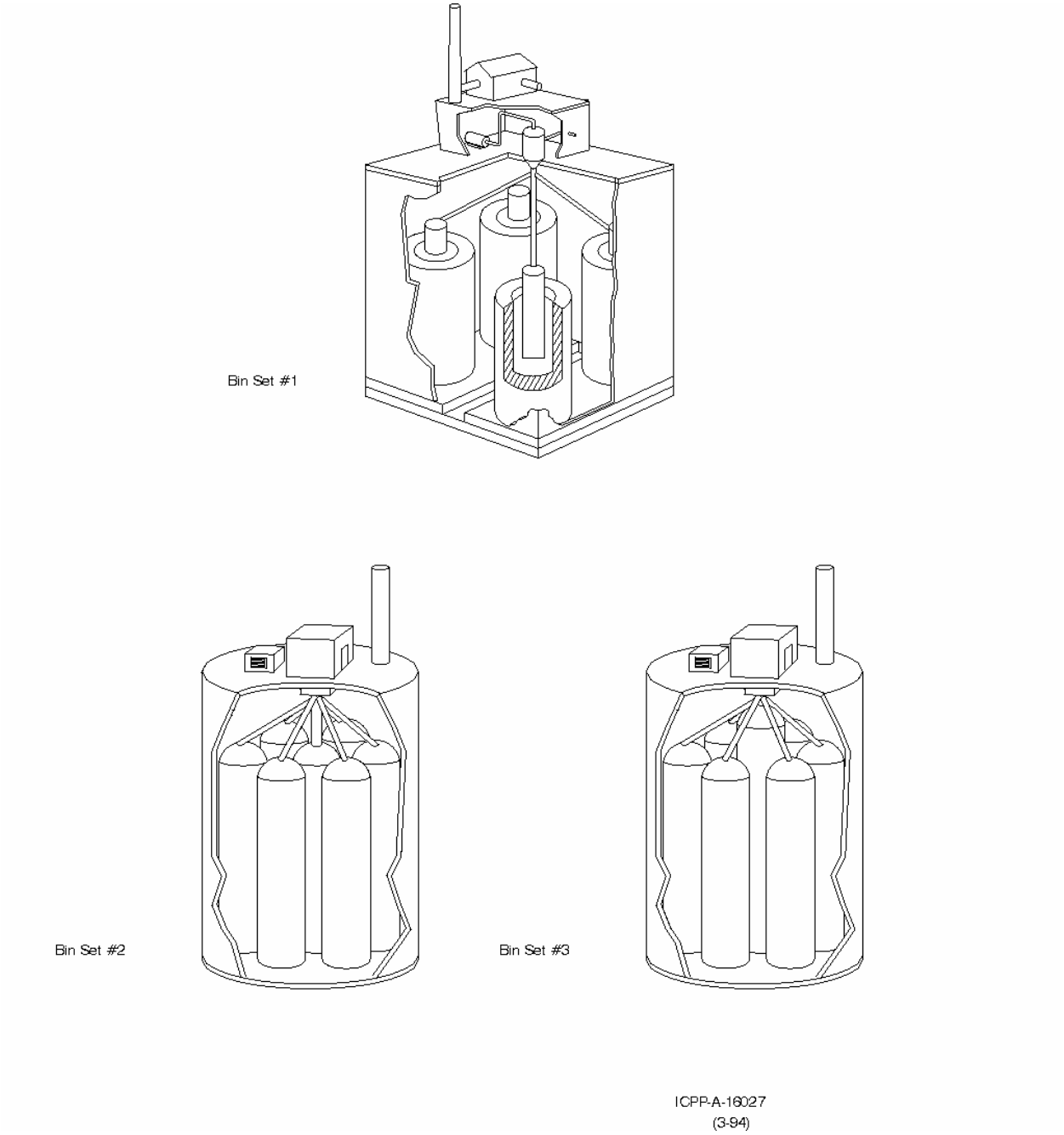

Exhibit B-3. Cut-away view of CSSFs 1, 2, and 3.

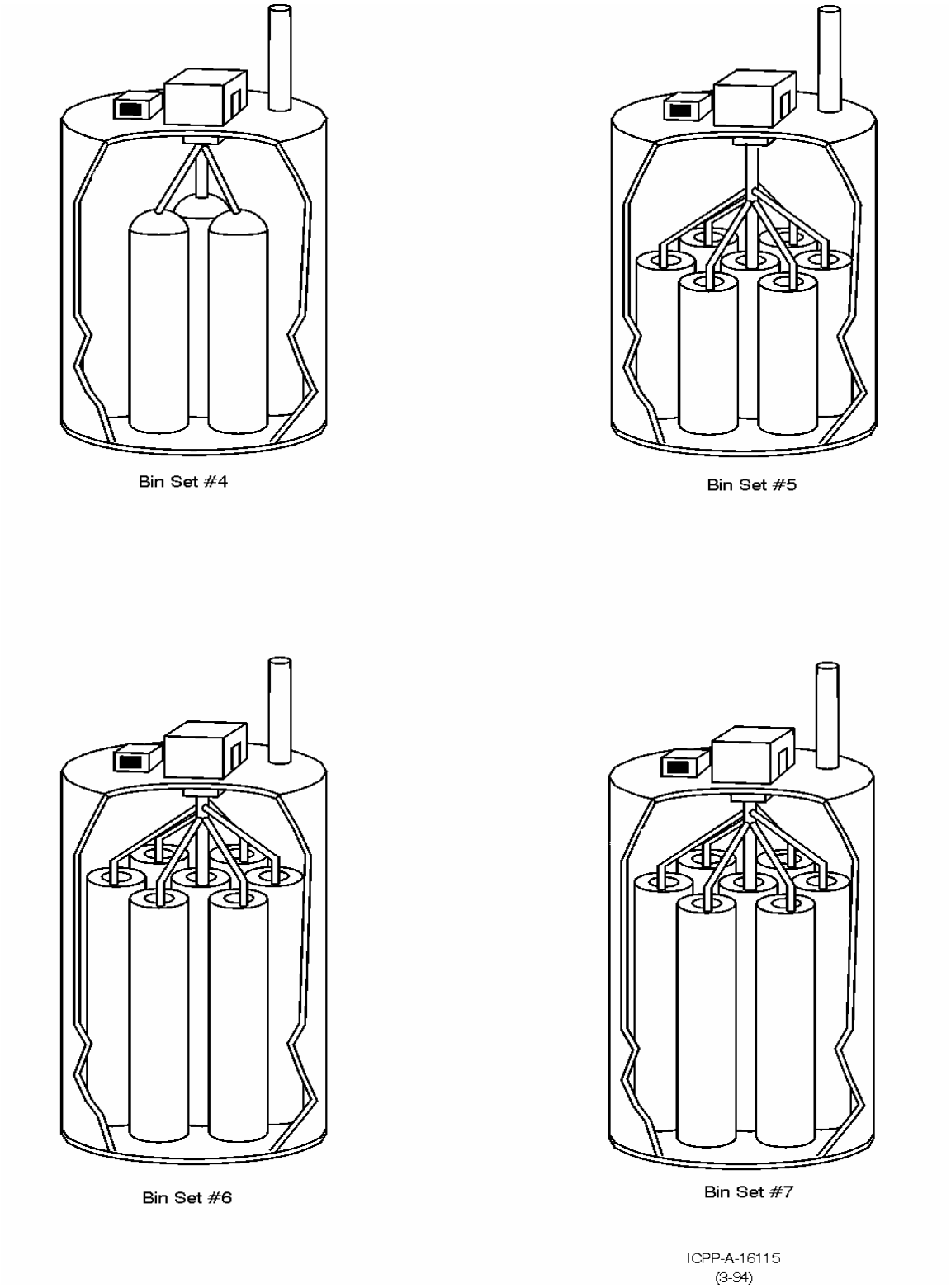

Exhibit B-4. Cut-away view of CSSFs 4, 5, 6, and 7.

RCRA PART B PERMIT APPLICATION

FOR THE

IDAHO NATIONAL LABORATORY

Volume 22
Idaho Nuclear Technology and Engineering Center

Calcined Solids Storage Facility

Attachment 2 - Section C
Waste Characteristics

February 2006

CONTENTS

TABLES

C. WASTE CHARACTERISTICS

This section has been prepared for the Idaho Nuclear Technology and Engineering Center (INTEC) Calcined Solids Storage Facility (CSSF) located at the Idaho National Laboratory (INL). The CSSF bins will be permitted for tank storage (Process Code S02). The purpose of this section is to describe the process and rationale utilized by the contractor to determine the physical and chemical characteristics of the wastes managed at these units. This section describes hazardous wastes and only the hazardous components of mixed wastes regulated by Hazardous Waste Management Act (HWMA)/ Resource Conservation and Recovery Act (RCRA), the Idaho Administrative Procedures Act (IDAPA), and the Code of Federal Regulations (CFR).

The CSSF is composed of seven bin sets designed to store high-activity mixed wastes produced from calcination in the Waste Calcining Facility (WCF), from 1963 through 1981, and the New Waste Calcining Facility (NWCF), from 1982 through 2000. The bin sets are comprised of an arrangement of bins contained within a concrete vault. Detailed descriptions of CSSF composition and bin set arrangement are provided in Sections B and D of this Part B permit application.

C-1 CHEMICAL AND PHYSICAL ANALYSES: [IDAPA 58.01.05.012 and .008; 40 CFR §§ 270.14(b)(2) and 264.13(a)]

The CSSF units described in this permit application store calcine generated by the WCF and NWCF. Calcine is a granular solid mixed waste without free liquids regulated as hazardous under IDAPA 58.01.05.005 (40 CFR 261, Subparts C and D) and radioactive under the Atomic Energy Act.

Radionuclides that contribute the majority of the activity for wastes managed in the CSSF include Sr-90, Y-90, Ba-137m, and Cs-137. Activity of typical calcine is approximately 10 mCi/g. The exposure rates associated with the calcine routinely exceed 10 rem/h on a 15-mL sample and can pose a potentially serious hazard to workers at the INL, if appropriate protective measures such as time, distance, and shielding are not applied.

Due to the highly radioactive nature of wastes managed in the CSSF, characterization and the assignment of Environmental Protection Agency (EPA) hazardous waste numbers (HWNs) occur through the use of acceptable knowledge, which involves both process knowledge and/or chemical/physical testing of the waste. Listed HWNs are applied based on knowledge of the processes. *A Regulatory Analysis and Reassessment of U.S. Environmental Protection Agency Listed Hazardous Waste Numbers for Applicability to the INTEC Liquid Waste System*, INEEL/EXT-98-01213, Rev. 1, February 1999,

identifies the listed HWNs associated with INTEC waste treatment systems. Characteristic HWNs may be applied by testing the waste according to the methods set forth in Subpart C of 40 CFR Part 261, or according to an equivalent method approved by the Director of the Idaho Department of Environmental Quality (DEQ), or by applying knowledge of the hazard characteristic of the waste in light of the materials or the processes used.

The RCRA Part A Permit application for the CSSF shows 12 EPA HWNs. Of the 12 HWNs identified, four (4) are listed HWNs and eight (8) are characteristic HWNs.

Core samples of alumina and zirconia calcine were obtained from bins within Bin Set 2 in 1978. The purpose of the 1978 sampling was to obtain information on the physical properties and condition of the stored calcine and to determine whether changes occurred during calcine storage to support long-term waste management and calcine retrieval studies. The alumina calcine was retrieved from Bin No. 3 in Bin Set 2, and the zirconia calcine was retrieved from Bin No. 7 in Bin Set 2. These samples were analyzed for radiological constituents. The analytical results showed that the calcine remained unchanged from the time of placement.

Sub samples were taken from these core samples in June 2003 for RCRA characterization analysis. The overall purpose of the sampling effort was to: (1) provide analyses of a representative sample of the waste in support of this permit application; (2) correlate characterization data from sampling and analysis of the calcine with predicted modeled values (flow sheets) that were based on characterization of the liquid waste feed to the calciner; and (3) determine whether organic constituents are present in the calcine at concentrations requiring application of the HWMA/RCRA toxicity characteristic codes.

Analytical data will also be compared to recent historical data from calcine samples collected for other purposes to determine if any constituents (or concentrations) unique to the calcine sampled during this event can be identified.

Samples of alumina and zirconia calcine were also collected from the NWCF during a processing campaign in 1993. This calcine was analyzed at the same time as the samples collected during the June 2003 sampling event. The analytical data for the samples is shown in Appendix 3.

C-1b Waste in Tank Systems: [IDAPA 58.01.05.008; 40 CFR §§ 264.191(b)(2) and 264.192(a)(2)]

The characteristics of calcine produced from the treatment of liquid radioactive waste correspond to the characteristics of the liquid wastes fed to the calciners. When the calcining process was initiated, the waste feed primarily resulted from the processing and recovery of enriched uranium from spent nuclear fuel. The spent fuels contained aluminum, stainless steel, graphite, or Zircaloy^{R} (a zirconium alloy) as the primary fabrication or cladding material. The chemical characteristics of calcine produced as a result of spent fuel reprocessing were determined and documented based upon the unique constituents contained in each type of fuel element and the methodology used for reprocessing. Later, when spent nuclear fuel reprocessing was discontinued at the INTEC in the early 1990s, other liquid radioactive wastes were calcined. These included liquid mixed wastes generated from activities such as decontamination and subsequent (after first cycle) processing of spent nuclear fuel. These solutions were generally high in sodium and potassium nitrates and are referred to as sodium-bearing waste (SBW). Other newly generated liquid mixed wastes (NGLW), primarily associated with decontamination activities not associated with processing spent fuel, were also transferred to the INTEC Tank Farm Facility. These wastes were subsequently calcined, and are currently stored in the CSSF.

Bin Sets 1, 2, and 3 received calcined waste from the WCF only. These wastes were generated from spent nuclear fuel reprocessing operations occurring at the INTEC. Bin Sets 4, 5, and 6 received calcined waste from the NWCF only. These bins contain calcine resulting from spent fuel reprocessing, SBW, and NGLW. Bin Set 7 has not received any waste.

The chemical composition of calcine includes metal oxides and metal salts of aluminum, boron, cadmium, calcium, chromium, mercury, radionuclides, sodium, and zirconium. The concentration of the principal constituents of aluminum, cadmium, calcium, chromium, fluoride, mercury, sodium, and zirconium is variable, depending on the composition of the waste calcined. Typical calcine composition for each type of liquid radioactive waste treated is given in Table C-1. Approximate calcine composition by Bin Set for Bin Sets #1 through #6 is given in Table C-1.a.

Aluminum, zirconium, zirconia-sodium, and aluminum-sodium calcine are readily distinguished from each other on the basis of chemical composition. Aluminum calcine is predominantly aluminum oxide and contains small amounts of mercury compounds. Zirconium blends can be distinguished from other calcine types by the high percentages of zirconium oxide and calcium fluoride and the absence of cadmium oxide. Zirconia-sodium calcine is readily distinguished from other types by the sodium and potassium content. Aluminum-sodium calcine is readily distinguished from other types by the aluminum oxide and sodium content.

Table C-1. Typical calcined product composition [a] - excluding oxide (in wt%).

Component	Waste Type			
	Aluminum	Zirconium	Fluorinel/SBW	Aluminum Nitrate/SBW
Aluminum	87.3	20.0	20.0	53.4
Boron	0.4	1.1	1.0	0.8
Cadmium	N/A	N/A	5.5	0.2
Calcium	N/A	32.0	31.9	4.0
Chloride	N/A	N/A	0.1	0.4
Chromium	N/A	0.4	0.1	0.1
Fluoride	N/A	25.0	21.9	1.0
Iron	0.1	0.3	0.2	0.4
Mercury	5.5	N/A	0.001	0.003
Nitrate	2.6	0.1	8.1	23.0
Potassium	0.1	0.1	0.9	2.5
Sodium	1.4	N/A	4.1	11.4
Sulfate	1.5	N/A	3.7	1.4
Tin	N/A	0.3	0.2	N/A
Zirconium	N/A	18.2	15.5	0.3

[a] Source: Staiger (2003), Table 3.
SBW = sodium-bearing waste

Table C-1.a. Approximate calcine composition by Bin Set (for Bin Sets #1 to #6).

Component	**Weight %**					
	Bin Set #1	**Bin Set #2**	**Bin Set #3**	**Bin Set #4**	**Bin Set #5**	**Bin Set #6** [d]
Al_2O_3	90.6	39.5	23.8	14.2	14.2	58.8
ZrO_2	---	14.8	17.3	19.4	19.9	2.4
CaF_2	---	34.1	40.3	45.2	46.4	6.8
B_2O_3	0.6	2.1	2.3	2.6	2.6	1.5
Na_2O	3.1	1.0	1.9	4.2	3.6	7.9
K_2O	---	---	0.1	0.9	0.7	1.8
CaO	---	2.5	5.9	8.0	10.9	7.1
Fe_2O_3	0.6	0.3	0.2	0.3	0.2	1.0
Hg	2.9	1.0	---	---	---	---
SO_4	1.2	0.4	0.1	0.3	0.3	1.0
PO_4	---	---	0.1	0.1	0.2	0.1
Cl	---	0.1	0.1	0.1	0.1	0.2
Other	1	4 [b]	8.0[b]	4.8 [b]	1.0	0.7
NO_3 [c]	1	1	~3.5	~5	~5	10.5

a. Source: Berreth (1988), Tables 4-3 and 4-4. NOTE; The referenced Table 4-3 also shows CdO and SnO_2, which are not depicted in Table 4-4 or in the table above.
b. Bin Sets #2, #3, and #4 includes about 3%, 7%, and 4%, respectively as dolomite [$CaMg(C0_3)_2$] start-up material.
c. NO_3 is present as percent of tatal calcine composition.
d. The composition for Bin Set #6 includes dolomite as components, not as "Other" as previously specified for Bin Sets #1 through #5.

Generally calcine is composed of dry white-to-gray, black, brown, or rust-colored subrounded to rounded grains that average 0.2 mm to 1.0 mm in diameter. The bulk density of calcine varies between 1.0 and 1.7 g/cm^3

C-2 WASTE ANALYSIS PLAN: [IDAPA 58.01.05.008 and 012; 40 CFR §§ 264.13(b) and 270.14(b)(3)]

The regulations under RCRA, as implemented through IDAPA 58.01.05.008 (40 CFR § 264.13), require a Waste Analysis Plan (WAP) for regulated waste management units. This WAP identifies what waste characterization information is needed, the nature and extent of information required, the method(s) by which the information is gathered, and the quality assurance and quality control (QA/QC) goals.

The process outlined in this WAP is implemented for characterization of all mixed/hazardous wastes or potentially hazardous wastes managed at the INTEC units described herein. Wastes subject to this plan include wastes generated from INL operations and treatment residues generated from INL RCRA-regulated waste management activities. As such, this WAP is intended for inclusion in day-to-day waste management operations.

This WAP is established to ensure that all data used for waste characterization are scientifically valid, defensible, and of known precision and accuracy. This objective relies on the identification of appropriate parameters and rationale, analytical methods, sampling methodologies, and quality control.

The objectives of this WAP are as follows:

- Ensure that sufficient information is available to provide safe handling, storage, and treatment of waste materials
- Define the parameters for characterization and the rationale for selection
- Establish consistent sampling, sample management, analytical methods, parameter selection, and controls for wastes received and generated
- Provide a description of the waste stream characterization and approval process from the point of waste generation through final disposition of the waste
- Establish unit-specific waste acceptance criteria (where necessary) for treatment units to ensure that sufficient information is available to determine whether the wastes considered for storage at the respective units meet the requirements established in this permit application
- Define land disposal restriction (LDR) requirements applicable to wastes managed in the miscellaneous treatment, and storage units

- Verify that EPA HWNs for wastes stored or treated are acceptable per the EPA HWNs listed in the Part A permit application.

This WAP will be revised whenever test methods are changed or whenever regulations change that affect the WAP.

C-2a Parameters and Rationale: [IDAPA 58.01.05.008; 40 CFR §§ 264.13(b)(1) and (2)]

Tables C-2 and C-3 outline the parameters for analysis and corresponding rationale that are employed to perform hazardous waste determinations in accordance with IDAPA 58.01.05.006 (40 CFR § 262.11) and to assess LDR requirements. The parameters and rationale presented in these tables are selected to ensure compliance with RCRA and unit-specific waste acceptance requirements, and guarantee safe, compliant treatment and storage. Not all of the parameters identified in Tables C-2 and C-3 are selected for each waste stream. Only the specific parameters applicable to each waste stream are evaluated.

Wastes are characterized and LDR requirements are determined at the point of generation by facility personnel with assistance from other contractor organizations, as needed, by analyzing the waste or by applying process knowledge. The following are examples of process knowledge:

- Raw materials used – knowledge of the type, quantity, and concentration of raw materials used in the system combined with detailed knowledge of the generating process may provide enough information to adequately characterize the waste.

- Process description – pertinent details of the process generating the waste and the chemicals used in the process must be described. The more complex the process, the more information would be required.

- Chemical/material composition specifications – chemical specifications may be available from the purchase specifications of a particular chemical, from product information provided by the manufacturer, or from the labels for the particular chemical in question. For pure chemicals whose contents and characteristics are known (e.g., nitric acid), standard chemical reference materials may supply the required information. Standard material composition reference tables may supply the required information for metals, plastics, and other materials manufactured to certain grades, alloy specifications, etc., whose material contents and characteristics are well known (e.g., Type 304 stainless steel).

- Material safety data sheets (MSDSs) – chemical specifications and related information are available on these standard reference materials. MSDSs may be provided by the manufacturer or acquired through available MSDS databases.

Table C-2. Test methods for waste analysis parameters and rationale.

PARAMETER	TEST METHOD(S)[a]	RATIONALE
Toxicity characteristic	1311 Toxicity characteristic leaching Procedure (TCLP) or process knowledge	Determine the waste and LDR status.
Metals: antimony arsenic barium beryllium cadmium chromium lead mercury nickel selenium silver thallium	3005A, 3010A, 3050B, 3051, 3052, 6010, 7470, 7471 or process knowledge	Determine if the waste is characteristically hazardous for toxicity. Determine reasonably expected underlying hazardous constituents (UHCs).
Volatile and semi-volatile organic compounds	5030B, 5035, 8015, 8082, 8260B, 3510C, 3550B, 3600C, 8270C or process knowledge	Determine whether the waste is characteristically toxic for organic compounds or whether listed waste constituents can be detected. Identify reasonably expected UHCs.
Flash point	1010, 1020, ASTM D93-80, D3828-81 or process knowledge	Determine if waste is characteristically ignitable.
Corrosivity/Acidity, pH or Corrosivity toward steel	ACMM 7012[b], 9040B, 9045C, 9441A or process knowledge	Determine if the waste is characteristically corrosive.
Reactivity (cyanides, sulfides, water reactive, chemical stability, shock sensitive)	C003[c], 9010B, 9013, 9014, 9030B, 9031, 9034, or process knowledge	Determine if waste is characteristically reactive and prevent mixing of incompatible wastes in tank and treatment systems.
Free liquids	9095A Paint Filter Liquids Test, visual inspection or process knowledge	Determine whether the waste is a solid or a liquid.
Total organic carbon (TOC)	9060 or process knowledge	Determine whether organics may be present in measurable quantities.

ASTM = American Society for Testing and Materials
ACMM = Analytical Chemistry Methods Manual

a. Methods are from *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, unless otherwise stated.
b. G. L. Booman, M. C. Elliot, R. B. Kimball, F. O. Cartan, J. E. Rein, "Determination of Free Acid in the Presence of Hydrolyzable Ions," Analytical Chemistry, 30 No. 2 (February 1958), pp. 284-287.
c. Arthur D. Little, Inc., Sampling and Analysis Methods for Hazardous Waste Combustion, EPA-600/8-84-002, NTIS No. PN84-1555845, February 1984.

Table C-3. Test methods, parameters, and rationale for LDR status.

PARAMETER	TEST METHOD(S)[a]	RATIONALE
Toxicity characteristic	1311 Toxicity Characteristic Leaching Procedure (TCLP) or process knowledge	Determine waste and LDR status for toxicity.
Metals: antimony arsenic barium beryllium cadmium chromium lead mercury nickel selenium silver thallium	3005A, 3010A, 3050B, 3051, 3052, 6010, 7470, 7471 or process knowledge	Determine LDR status for toxicity. Evaluate mercury subcategory and UHCs.
Volatile and Semivolatile organic compounds	5030B, 5035, 8015, 8082, 8260B, 3510C, 3550B, 3600C, 8270C or process knowledge	Determine listed waste and LDR status for toxicity. Evaluate UHCs.
Flash point	1010, 1020, ASTM D93-80, D3828-81 or process knowledge	Determine LDR status for ignitability.
Corrosivity/Acidity, pH or Corrosivity toward steel	ACMM 7012[b], 9040B, 9045C, 9441A or process knowledge	Determine LDR status for corrosivity.
Reactivity (cyanides, sulfides, water reactive, chemical stability, shock sensitive)	C003[c], 9010B, 9013, 9014, 9030B, 9031, 9034, or process knowledge	Determine LDR status for reactivity and subcategory.
Free liquids	9095A Paint Filter Liquids Test, visual inspection or process knowledge	Determine whether the waste is a solid or a liquid.
Total organic carbon (TOC)	9060 or process knowledge	Determine wastewater or nonwastewater category
Total suspended solids (TSS)	160.1[d] or process knowledge	Determine wastewater or nonwastewater category

ASTM = American Society for Testing and Materials
ACMM = Analytical Chemistry Methods Manual

a. Methods are from *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, unless otherwise stated.
b. G. L. Booman, M. C. Elliot, R. B. Kimball, F. O. Cartan, J. E. Rein, "Determination of Free Acid in the Presence of Hydrolyzable Ions," Analytical Chemistry, 30 No. 2 (February 1958), pp. 284-287.
c. Arthur D. Little, Inc., "Sampling and Analysis Methods for Hazardous Waste Combustion," EPA-600/8-84-002, NTIS No. PN84-1555845, February 1984.
d. "Methods for Chemical Analysis for Water and Wastes," EPA-600/4-79-020.

- Process reference materials including laboratory notebooks, strip charts, correspondence, chemical analyses, and analytical reports.

- Analytical reports from non-SW-846 chemical analyses or information from similar processes.

If process knowledge is adequate to ensure that a particular constituent is not present in the waste, then analysis for that constituent will not be performed. If process knowledge is not sufficient to eliminate a particular parameter, then that parameter will undergo selection for testing.

Specific parameters selected for RCRA characterization analysis are determined on a case-by-case basis. Facility personnel select the appropriate parameters based on knowledge of the waste source, unit-specific waste acceptance criteria (WAC), and characterization requirements to identify RCRA-regulated wastes. This ensures that the appropriate parameter selection will be matched with the correct analytical method(s) to generate the data required for subsequent management of the waste within the CSSF.

All process knowledge determinations and RCRA characterization analytical results are documented in the facility operating record.

C-2a(1) Waste Acceptance Criteria

Wastes processed in the WCF and NWCF were required to meet their WAC prior to acceptance and treatment. Upon generation, calcine was transported to the CSSF for storage without further evaluation.

Although, the CSSF bins are not currently receiving any waste, the Idaho High-Level Waste and Facilities Disposition Final Environmental Impact Statement Record of Decision may select a waste treatment option that would require the use of the bin sets. This permit application would allow the continued use of the Bin Sets 1, 2, 3, 4, and 5 for storage and Bin Sets 6 and 7 for storage and to receive future waste transfers.

When the Record of Decision selects a waste treatment option and is finalized this permit will be modified to reflect the waste acceptance criteria for selected process and the waste form that will be transferred to Bin Sets 6 and 7.

The WCF has been closed as a RCRA landfill and the NWCF has undergone RCRA-regulated closure. As part of closure, the waste transfer lines from the WCF were cut and capped and the waste transfer lines from the NWCF to the CSSF have been physically isolated in accordance with the approved closure plan.

C-2a(2) Waste Acceptance Process

Wastes stored in the CSSF were calcined in either the WCF or the NWCF. The WCF completed RCRA-regulated closure in 1999. The NWCF is currently undergoing RCRA-regulated closure.

LDR Requirements

Point-of-generation facility personnel provide waste characterization information and use this information to complete LDR notifications, per IDAPA 58.01.05.011 (40 CFR § 268.7). In cases where facility personnel determine that an LDR waste does not meet the applicable treatment standard(s) set forth in IDAPA 58.01.05.011 (40 CFR § 268, Subpart D), or exceeds the applicable prohibition level(s) set forth in IDAPA 58.01.05.011 (40 CFR § 268.32) or Section 3004(d) of RCRA, facility personnel provide written notice in accordance with IDAPA 58.01.05.011 [40 CFR § 268.7(a)(2)].

In cases where facility personnel determine that a restricted waste is being managed that can be land-disposed without further treatment, facility personnel submit written notice stating that the waste meets (or is exempt from) applicable treatment standards set forth in IDAPA 58.01.05.011 (40 CFR § 268, Subpart D) and the applicable prohibition level(s) set forth in IDAPA 58.01.05.011 (40 CFR § 268.32) or Section 3004(d) of RCRA. The notice must be in accordance with IDAPA 58.01.05.011 [40 CFR § 268.7(a)(3)].

Point-of-generation facility personnel provide LDR notices. Required LDR notifications will be prepared as necessary prior to shipment of any treatment residuals for final disposal according to applicable laws and regulations.

C-2b Test Methods: [IDAPA 58.01.05.008; 40 CFR § 264.13(b)(2)]

Waste Analysis

Analytical methods employed are primarily taken from EPA's *Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods* (SW-846, current edition). In those cases where method-defined parameters[1] are required by regulation, SW-846 methods are always employed. Examples of method-defined

1. The use of an SW-846 method is mandatory for the following Resource Conservation and Recovery Act (RCRA) applications contained in 40 CFR Parts 260 through 270:
   - Section 260.22(d)(1)(i) - Submission of data in support of petitions to exclude a waste produced at a particular facility (i.e., delisting petitions)
   - Section 261.22(a)(1) and (2) - Evaluation of waste against the corrosivity characteristic
   - Section 261.24(a) - Leaching procedure for evaluation of waste against the toxicity characteristic
   - Section 261.35(b)(2)(iii)(A) - Evaluation of rinsates from wood preserving cleaning processes
   - Sections 264.190(a), 264.314(c), 265.190(a), and 265.314(d) - Evaluation of waste to determine if a free liquid is a component of the waste

parameter methods, where the analytical result is wholly dependent on the process used to make the measurement, include the use of the TCLP to prepare a leachate, flash point, pH, corrosivity tests, and paint filter liquids. The cited test methods will be performed at the laboratories per controlled implementing procedures.

The EPA provides for a degree of flexibility in the use of SW-846 and other approved methods. This flexibility is dependent on the maintenance of precision, accuracy (or bias), recovery, representativeness, comparability, and sensitivity (detection, quantitation, or reporting limits) relative to the data quality objectives for the intended use of the analytical results. "If an alternative analytical procedure is employed, then EPA expects the laboratory to demonstrate and document that the procedure is capable of providing appropriate performance for its intended application. This demonstration must not be performed after the fact, but as part of the laboratory's initial demonstration of proficiency with the method. The documentation should be in writing, maintained in the laboratory, and available for inspection upon request by authorized representatives of the appropriate regulatory authorities" (SW-846, Chapter Two, "Choosing the Correct Procedure").

Joint EPA/Nuclear Regulatory Commission (NRC) guidance[2] for mixed waste also provides flexibility in sample sizes with method-defined parameter methods, as long as the resulting test is sufficiently sensitive to measure the constituents of interest at the regulatory levels prescribed in the TCLP. Other variances to published testing and sampling protocols are permissible under 40 CFR §§ 260.20-21, but must be approved prior to implementation by the Director of the DEQ.

The EPA allows for the use of recognized methods other than those prescribed in SW-846. "Whenever methods from SW-846 are not appropriate, recognized methods from source documents published by the EPA, American Public Health Association (APHA), American Society for Testing and

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- Sections 264.1034(d)(1)(iii) and 265.1034(d)(1)(iii) - Evaluation of organic emissions from process vents
- Sections 264.1063(d)(2) and 265.1063(d)(2) - Evaluation of organic emissions from equipment leaks
- Section 266.106(a) - Evaluation of metals from boilers and furnaces
- Sections 266.112(b)(1) and (2)(i) - Certain analyses in support of exclusion from the definition of a hazardous waste for a residue which was derived from burning hazardous waste in boilers and industrial furnaces
- Sections 268.7(a), 268.40(a), (b), and (f), 268.41(a), 268.43(a) - Leaching procedure for evaluation of waste to determine compliance with land disposal treatment standards
- Sections 270.19(c)(1)(iii) and (iv), and 270.62(b)(2)(i)(C) and (D) - Analysis and approximate quantification of the hazardous constituents identified in the waste prior to conducting a trial burn in support of an application for a hazardous waste incineration permit
- Sections 270.22(a)(2)(ii)(B) and 270.66(c)(2)(i) and (ii) - Analysis conducted in support of a destruction and removal efficiency (DRE) trial burn waiver for boilers and industrial furnaces burning low risk wastes, and analysis and approximate quantification conducted for a trial burn in support of an application for a permit to burn hazardous waste in a boiler and industrial furnace. Federal Register, Thursday, November 20, 1997, Vol. 62, No. 224, 62079.

2. *Federal Register*, Thursday, November 20, 1997, Vol. 62, No. 224, 62079.

Materials (ASTM), the National Institute for Occupational Safety and Health (NIOSH), or other recognized organizations with appropriate expertise should be used, if possible" (SW-846, Chapter One).

Because of the broad range of acceptable methods available for testing specific constituents, and with the rapid incorporation/deletion of methods, not all of the SW-846 methods are specified in Tables C-1 and C-2. Only the currently defined parameter methods are specified.

Calcine requires remote handling and is subject to full RCRA characterization requirements. The remote sample handling requirements and specific process stream requirements may cause deviations in some required analyses systems. For example, the EPA has determined that "if the analyst can demonstrate that the test is still sufficiently sensitive (in the case of reduced sample size in a TCLP extraction) to measure the constituents of interest at the regulatory levels specified in the TCLP and representative of the waste stream being tested" then the sample size can be legitimately decreased.[3] Sample size becomes a critical factor, especially with respect to radiation exposure hazards, and therefore, must be a factor for consideration in any sampling or analytical activity.

The analyses may be performed at INL laboratories or at approved off-Site laboratories. Laboratories contracted by the M&O contractor to perform outside work are audited periodically, to ensure that each laboratory's quality control procedures and standard practice manuals meet the requirements for laboratories conducting EPA test procedures. If the laboratory has not been audited, or has failed to conform to the audit criteria, that laboratory is not authorized by the M&O contractor to conduct waste characterization analysis.

Process Knowledge

The EPA/NRC guidance emphasizes the use of process knowledge to determine if a radioactive waste is hazardous, as a way to avoid unnecessary exposures to radioactivity. Examples of the types of process knowledge information used to characterize wastes for the CSSF are presented in Section C-2a of this permit application. The INL documents process knowledge through Waste Determination and Disposition Forms (WDDFs - waste stream profiles), correspondence, and memoranda maintained in the Document Management System. As a best management practice, the characterization documentation for all active waste streams is reviewed and each stream is recertified annually to ensure the information maintained remains accurate and complete.

All waste characterization information, including documentation of process knowledge, is maintained in the facility operating record.

3. Federal Register, Thursday, November 20, 1997, Vol. 62, No. 224, 62079.

C-2c Sampling Methods: [IDAPA 58.01.05.008 and 005; 40 CFR § 264.13(b)(3), Part 261 Appendix I]

Facility personnel, in conjunction with Waste Generator Services (WGS), and other organizations as needed, are responsible for characterizing wastes received into the CSSF. Personnel can use process knowledge and/or testing to adequately characterize waste. As part of characterization, the appropriate sampling method is selected based on knowledge of the waste material matrix (e.g., solid, liquid, sludge, radiological component) and radiation exposure considerations, as well as the specific analyte of interest. Facility personnel are also responsible for arranging all sampling and laboratory support and for sample shipments. Sampling personnel document the sampling activities and chain of custody.

Representative waste samples are obtained in accordance with the sampling approaches described in Chapter Nine of Test *Methods for Evaluating Solid Wastes, Physical/Chemical Methods* (SW-846, current edition). Samples are collected using appropriate equipment and methods identified in, but not limited to, the following sources:

- EPA Test Methods for Evaluating Solid Waste, SW-846, Chapter 10, "Sampling Methods," Third Edition
- 40 CFR 261, Appendix I, "Representative Sampling Methods"
- Annual Book of ASTM Standards, American Society for Testing and Materials, Current issue
- Characterization of Hazardous Waste Sites - A Methods Manual, Volume II, Available Sampling Methods, EPA-600/4-84-076, 2nd Edition, December 1984
- "Characterizing Heterogeneous Wastes: Methods and Recommendations," EPA/600/R-92/033, February 1992
- EPA Waste Analysis at Facilities that Generate, Treat, Store, and Dispose of Hazardous Wastes: A Guidance Manual, April 1994
- Other recognized methods from source documents published by the EPA, APHA, ASTM, the NIOSH, or other recognized organizations with appropriate expertise.

The Director of the DEQ must approve any sampling methods that deviate from approved or other recognized methods prior to implementation.

C-2c(1) Standard Sampling Methods

Due to the highly radioactive nature of the calcine stored in the CSSF, sampling occurs infrequently.

Any sampling will be completed in accordance with an approved sampling and analysis plan and conducted in accordance with approved sampling and operating procedures. In general, where standard samples are collected, the following basic sampling guidance is used:

- Obtain samples using precleaned sample equipment, in accordance with the applicable method.
- Fill sample containers. Uniquely identify and label each sample, and document necessary information in the field record (e.g., location, time, characteristics).
- Properly clean and decontaminate the exterior of the sample containers and the sampling hardware.
- Complete the chain-of-custody forms and retain a record copy.
- Deliver the samples and associated forms to the laboratory.

Sampling procedures for calcine may deviate from the standard sampling protocols, due to the hazards associated with radioactive materials. For example, due to radiological concerns, the use of remotely operated sample transfer systems may limit the size of sample containers, prevent sealing of the transfer receptacle, or preclude chain-of-custody and other documentation from directly accompanying the samples. However, all sampling procedures are consistent with the stated goals of SW-846, to collect representative samples and maintain their physical and chemical integrity.

Equipment used to sample waste is disposable or designed for decontamination. Contaminated disposable equipment is managed appropriately. Equipment that can be cleaned and reused is thoroughly decontaminated before reuse or storage. Decontamination solutions are managed appropriately.

C-2c(1)(a) Field Records

Records provide direct evidence and support for the necessary technical interpretations, judgments, and discussions concerning project activities. These records, particularly those anticipated to be used as evidentiary data, directly support current or ongoing technical studies and activities, and provide the historical evidence needed for later reviews and analyses.

Field records may consist of bound field notebooks, sample collection forms, personnel qualification and training forms, sample location maps, equipment maintenance documentation, chain-of-custody forms,

and/or sample analysis request forms. Records may include, but are not limited to the following, as applicable:

- Sample Collection–To ensure maximum utility of the sampling effort and resulting data, documentation of sampling protocol, as performed in the field, is essential. Sample collection records may contain the names of persons conducting the activity, sample number, sample location, date and time the sample was taken, equipment used, climatic conditions, documentation of adherence to protocol, and unusual observations.

- Chain-of-Custody Records–The chain of custody involving the possession of RCRA characterization samples from the time they are obtained until they are disposed or shipped off-Site are documented, and may include the project name, signatures of samplers, sample number, date and time of collection, grab or composite sample designation, signatures of individuals involved in sample transfer, and if applicable, the air bill or other shipping number.

- Quality Control (QC) Samples–Documentation for generation of QC samples, may include trip and equipment rinsate blanks, duplicate samples, and any field spikes.

- Deviations–All deviations from normal sampling and analysis protocols are recorded in the site logbook or project records.

- Reports–A copy of any report issued and any supporting documentation.

C-2c(2) Quality Control

Defensible and valid data are obtained through implementation of the processes controlling characterization and/or sampling and analysis. Such processes include the use of field and laboratory control samples, data validation, sampling performance assessments, and as necessary, corrective action(s) as identified in this section.

C-2c(2)(a) Field Control Samples

Control samples are QC samples that are intended to monitor the performance of the sampling system. In accordance with this WAP, the following field control samples may be collected:

- Field duplicates

- Equipment rinsate

- Trip blank-sample.

C-2c(2)(b) Laboratory Quality Control

Laboratories maintain QA programs to ensure the quality of data produced. Depending on the data end use and overall data quality objectives (DQOs), the laboratory QC samples may include:

- Matrix spike
- Matrix duplicate
- Matrix spike duplicate
- Laboratory blanks
- Control standards.

Off-Site laboratories must be approved by the INL. This approval process requires off-Site laboratories to pass stringent audit criteria included in the U.S. Department of Energy (DOE) Environmental Management Consolidated Audit Program (EMCAP). The EMCAP maintains audit checklists for such laboratory activities as general laboratory practices, quality assurance management systems, organic/inorganic data quality, radiochemistry data quality, electronic data management, hazardous and radioactive materials management, and industrial hygiene. These checklists are available to all facilities within the DOE Complex via the Internet. Once approved, laboratories are audited at regular intervals to ensure performance and QA/QC standards are met.

C-2c(2)(c) Data Validation

Depending on the data end use and overall project DQOs, data validation may include evaluation of the following subjects:

- Completeness of laboratory records with regard to processing of all required samples and analyses
- Implementation of appropriate procedures
- Evaluation of sample analytical data to required detection and quantity
- Evaluation of QC analytical data to applicable control criteria
- Comparison of sample holding times to the required holding times prescribed by this WAP.

All deviations from the applicable guidance are documented, and corrective actions are implemented as necessary.

C-2c(2)(d) Sampling Performance Assessment

A key function of a QC program is the periodic assessment of activities for conformance to required protocols. Sampling performance assessments may evaluate the following activities:

- Completeness of Field Reports–This evaluation determines that a complete record exists for each field activity and that the procedures specified by this WAP or the documents implementing this WAP were executed.

- Identification of Valid Samples–This review involves the evaluation and interpretation of field records to detect problems affecting the representativeness of samples.

All resultant concerns are documented, and corrective actions are implemented as necessary.

C-2c(2)(e) Mitigating Action

Mitigating action measures can be divided into two categories as follows:

- Project Mitigating Action–Mitigating actions are performed when the project objectives are not met, when conditions adverse to quality have been identified, or when an assessment of data reveals questionable or unknown data quality. Conditions adverse to quality are identified promptly, and corrected as soon as possible. When significant conditions adverse to quality are identified, the causes are determined, and mitigating actions to prevent their recurrence are performed and documented.

- Laboratory Mitigating Actions–The laboratory possesses a QA plan identifying analytical acceptance criteria and what actions to take when these criteria are not satisfied.

C-2d Frequency of Analyses: [IDAPA 58.01.05.008; 40 CFR § 264.13(b)(4)]

Waste stream characterizations are reviewed and recertified annually to ensure continued accuracy of the information provided. Typical waste streams managed at the INTEC are generated several times a year from highly controlled processes in which the waste composition remains consistent for the duration of the year. Recharacterization is required when:

- The process generating an established waste stream changes

- The waste characteristics are highly variable from batch to batch

- Analytical results do not correlate with waste profile information

- There is reason to suspect a change in the waste based on inconsistencies in the packaging or labeling of the wastes, or there are inconsistencies between the waste verification results and the waste characterization data provided by the generator

- Facility personnel reject the waste because it is inconsistent with the profile for that waste.

Facility personnel can require additional waste analysis to substantiate waste characterization data prior to acceptance of a waste.

C-2e Additional Requirements for Wastes Generated Off-Site [IDAPA 58.01.05.008; 40 CFR 264.13(c)]

The CSSF does not manage wastes generated off-Site.

C-2f Additional Requirements for Ignitable, Reactive, or Incompatible Wastes: [IDAPA 58.01.05.008; 40 CFR §§ 264.13(b)(6), 40 CFR 264.17]

Calcine generated by the treatment of wastes is a granular solid that does not exhibit the characteristics of ignitability or reactivity.

The CSSF storage units are operated in accordance with defined procedures that prevent incompatible wastes from contacting one-another. The tables in Appendix V of 40 CFR 264/265 and 49 CFR § 177.848 are examples of resources that may be used to determine compatibility. Since calcine was generated from the treatment of wastes with like or similar constituents, incompatibility is not a concern.

C-3 WASTE ANALYSIS REQUIREMENTS PERTAINING TO LAND DISPOSAL RESTRICTIONS [IDAPA 58.01.05.011; 40 CFR § 268]

The Hazardous and Solid Waste Amendments to RCRA authorize the land disposal of certain types of wastes only if LDR treatment standards are met. Information provided in this section describes the additional characterization requirements for assessing LDR applicability and compliance with the treatment standards before land disposal.

C-3a Waste Characterization

LDR applicability is determined for each waste at the point of generation based on the EPA HWNs assigned to individual waste streams. Once LDRs are identified, they remain applicable through treatment and/or disposal of the final waste form. Calcine or the final waste form will be disposed of in accordance with applicable laws and regulations.

The characterization process for purposes of LDR is the same as that employed during the initial characterization process. Facility personnel, with the assistance of WGS, and other organizations as needed, conduct hazardous waste determinations before management of the waste. The hazardous waste determination includes, where applicable, characteristic and listed EPA HWN determinations in addition to identification of wastewater and non-wastewater treatability groups, UHCs, LDR subcategories, and LDR treatment standards applicable to the waste.

During the initial characterization process, facility personnel select parameters and rationale for testing based on the rationale presented in Table C-2 and on the applicable LDR requirements found within IDAPA 58.01.05.011 and 40 CFR § 268 or process knowledge. If the waste is determined to be subject to the LDR requirements, facility personnel determine if the waste is a wastewater or non-wastewater, and also determine applicable subcategories. TOC and total suspended solids TSS analyses may be used to conduct wastewater/non-wastewater determinations, in cases where process knowledge is not adequate. Additional information on the characterization process is found in Sections C-1 and C-2.

Waste generated from activities such as maintenance and spill cleanup will undergo a hazardous waste determination based on testing and/or process knowledge as outlined within this document. If the waste is determined to be subject to LDR requirements, facility personnel will determine if the waste is a wastewater or non-wastewater and applicable subcategories using the parameters shown in Table C-2 or process knowledge.

C-3b Sampling and Analytical Procedures

Sampling and analysis will follow the same approach as outlined within Sections C-2 through C-2c. Test methods used to assess LDR treatment standards will be based on total analysis, unless otherwise specified in IDAPA 58.01.05.011 (40 CFR §§ 268.40 through 268.48).

C-3c Frequency of Analysis

Compliance with all LDR requirements will be demonstrated and documented prior to disposal of the final waste form. All LDR compliance documentation will be maintained in the facility operating record.

C-4 CALCINED SOLIDS STORAGE FACILITY SUBPART AA, SUBPART BB, AND SUBPART CC APPLICABILITY [IDAPA 58.01.05.008; 40 CFR §§ 264.1030, 264.1050, and 264.1080]

40 CFR 264 Subpart AA Applicability

The requirements contained in 40 CFR 264 Subpart AA do not apply to the CSSF, since it contains no process vents associated with distillation, fractionation, thin-film evaporation, solvent extraction, or air or steam stripping operations.

40 CFR 264 Subpart BB Applicability

The requirements contained in 40 CFR 264 Subpart BB do not apply to the CSSF, since the organic concentration of calcine is less than 10% by weight, as demonstrated by the analytical results provided as Appendix C-1.

40 CFR 264 Subpart CC Applicability

The requirements contained in 40 CFR 264 Subpart CC do not apply since the CSSF is a waste management unit used solely for the management of radioactive mixed waste in accordance with all applicable regulations under the authority of the Atomic Energy Act and the Nuclear Waste Policy Act and is specifically exempted per 40 CFR 264.1080(b)(6).

RCRA PART B PERMIT APPLICATION

FOR THE

IDAHO NATIONAL LABORATORY

Volume 22
Idaho Nuclear Technology and Engineering Center

Calcined Solids Storage Facility

Attachment 1 - Section D
Process Description

February 2006

CONTENTS

LIST OF EXHIBITS

D. PROCESS INFORMATION

This permit application will focus on the CSSF, also known as bin sets, located at the Idaho Nuclear Technology and Engineering Center (INTEC) on the Idaho National Laboratory (INL). The CSSF includes Bin Sets 1, 2, 3, 4, 5, 6, and 7 located in the northeast quadrant of the INTEC. CSSF Bin Set 1 contains four stainless-steel composite bins. CSSF Bin Sets 2–7 consist of either three or seven stainless-steel storage bins. All CSSF bin sets are located in underground or partially underground concrete vaults. The CSSF bins are being permitted for tank storage (S02) under Idaho Administrative Procedures Act (IDAPA) 58.01.05.008 (40 CFR 264, Subpart J) requirements.

Although the Calcined Solids Storage Facility (CSSF) bins are not currently receiving any waste, the Idaho High-Level Waste and Facilities Disposition Final Environmental Impact Statement Record of Decision may select a waste treatment option that would require the use of the bin sets. This permit application would allow the continued use of the Bin Sets 1, 2, 3, 4, and 5 for storage and Bin Sets 6 and 7 for storage and to receive future waste transfers.

From December 1963 to June 2000, the calciners at the INTEC were used to convert approximately 7,920,000 gal of liquid mixed waste into approximately 155,600 ft^3 of granular calcine solids. In the calciner processes liquid wastes were injected into a high-temperature (400 to 600^o C) air-fluidized bed of granular solids. The liquid portion of the waste evaporated and the solids adhered to the granular material-producing calcine. Exhibit D-1 provides a diagram of the typical calciner process flow. Calcined solids were pneumatically transferred from the calciner facilities to the CSSF via air transport lines. In the CSSF, the solids are stored in stainless-steel bins located in underground or partially underground concrete vaults to isolate them from the environment. Exhibit D-2 provides the calcine solids flow path from the Waste Calcining Facility (WCF) to the CSSF. Exhibit D-3 provides the calcine solids flow paths from the New Waste Calcining Facility (NWCF) to the CSSF.

D-2. Tank Systems

The following identifies the CSSF tanks, ancillary equipment, and boundaries of the CSSF. Each individual bin set and ancillary equipment meets the Hazardous Waste Management Act (HWMA) /RCRA definition of a tank system, although no free liquids are stored in the CSSF. The bin sets are located inside underground or partially underground concrete vaults intended to satisfy radiation protection standards, not RCRA-defined secondary containment.

- CSSF 1 consists of four composite tank groups, VES-WCS-115-1 through VES-WCS-115-4, and Distributor Pipe VES-WCS-3083, located in Vault CPP-741 (see Drawings 106576 and 106577, Appendix 1).

- CSSF 2 consists of seven tanks, VES-WCS-136-1 through VES-WCS-136-7, and Distributor Pipe VES-WCS-137, located in Vault CPP-742 (see Drawings 118862 and 118871, Appendix 1).

- CSSF 3 consists of seven tanks, VES-WCS-140-1 through VES-WCS-140-7 (VES-WCS-140-7 was originally designated as VES-WCS-139 and later changed), and Distributor Pipe VES-WCS-141, located in Vault CPP-746 (see Drawings 153510 and 154129, Appendix 1).

- CSSF 4 consists of three tanks, VES-WS4-142 through VES-WS4-144, and Distributor Pipe VES-WS4-145, located in Vault CPP-760 (see Drawings 155750 and 157798, Appendix 1).

- CSSF 5 consists of seven tanks, VES-WS5-146 through VES-WS5-152, and Distributor Pipe VES-WS5-153, located in Vault CPP-765 (see Drawings 158491 and 158510, Appendix 1).

- CSSF 6 consists of seven tanks, VES-WS6-154 through VES-WS6-160, and Distributor Pipe VES-WS6-161, located in Vault CPP-791 (see Drawings 160283 and 161425, Appendix 1).

- CSSF 7 consists of seven tanks, VES-WS7-162 through VES-WS7-168, and Distributor Pipe VES-WS7-169, located in Vault CPP-795 (see Drawing 099162 and 165772, Appendix 1).

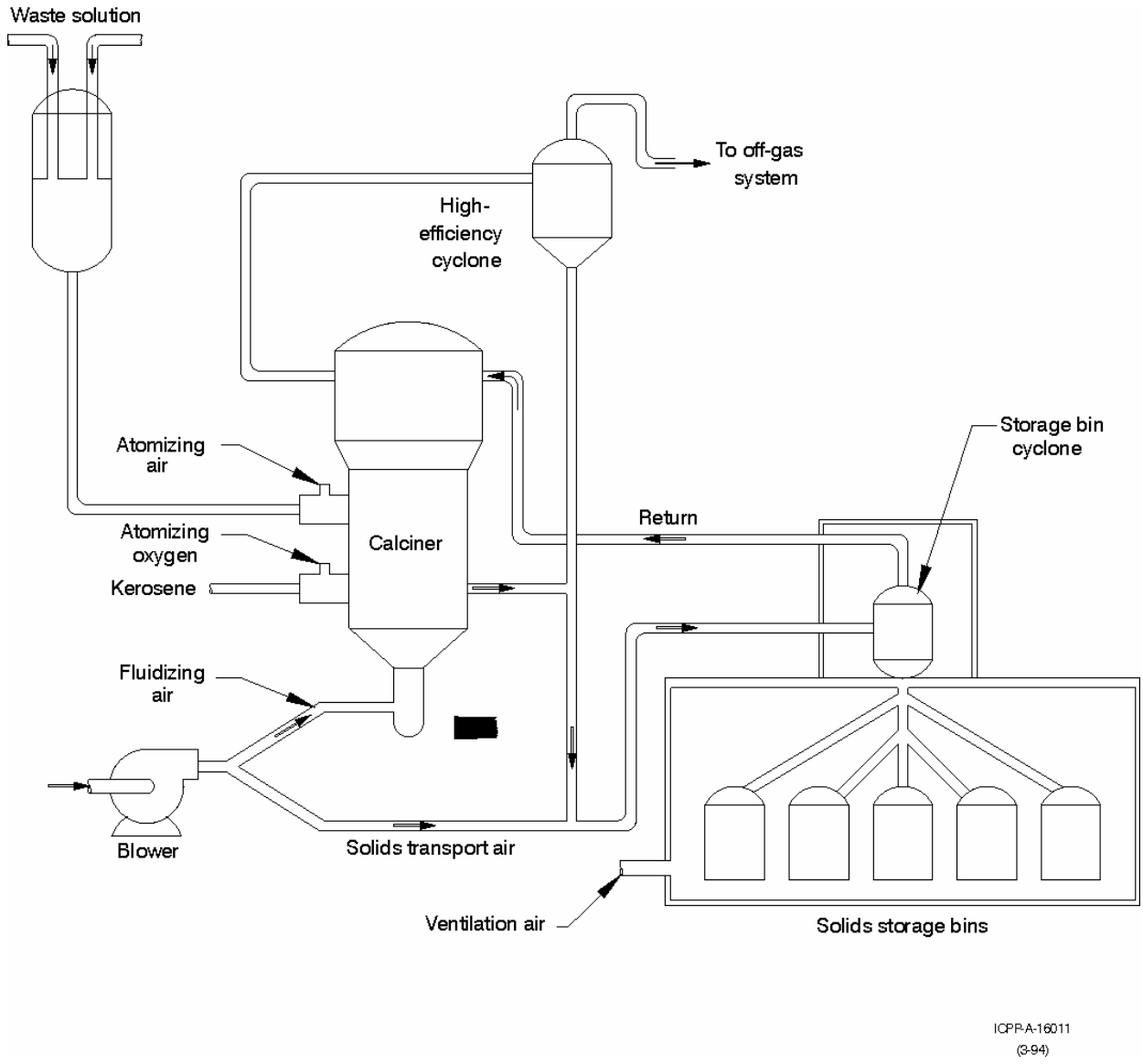

Exhibit D-1. Typical calciner process flow.

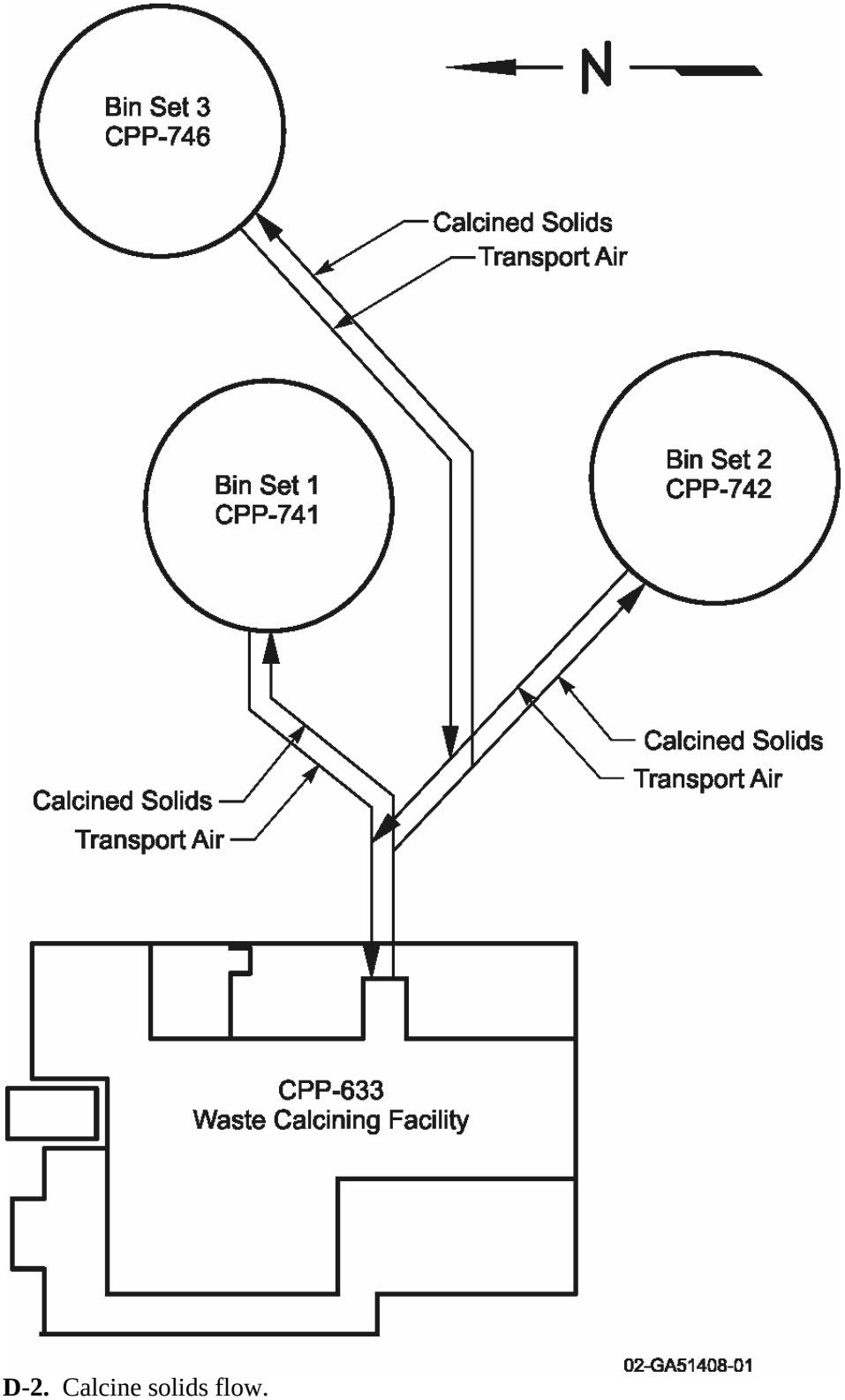

Exhibit D-2. Calcine solids flow.

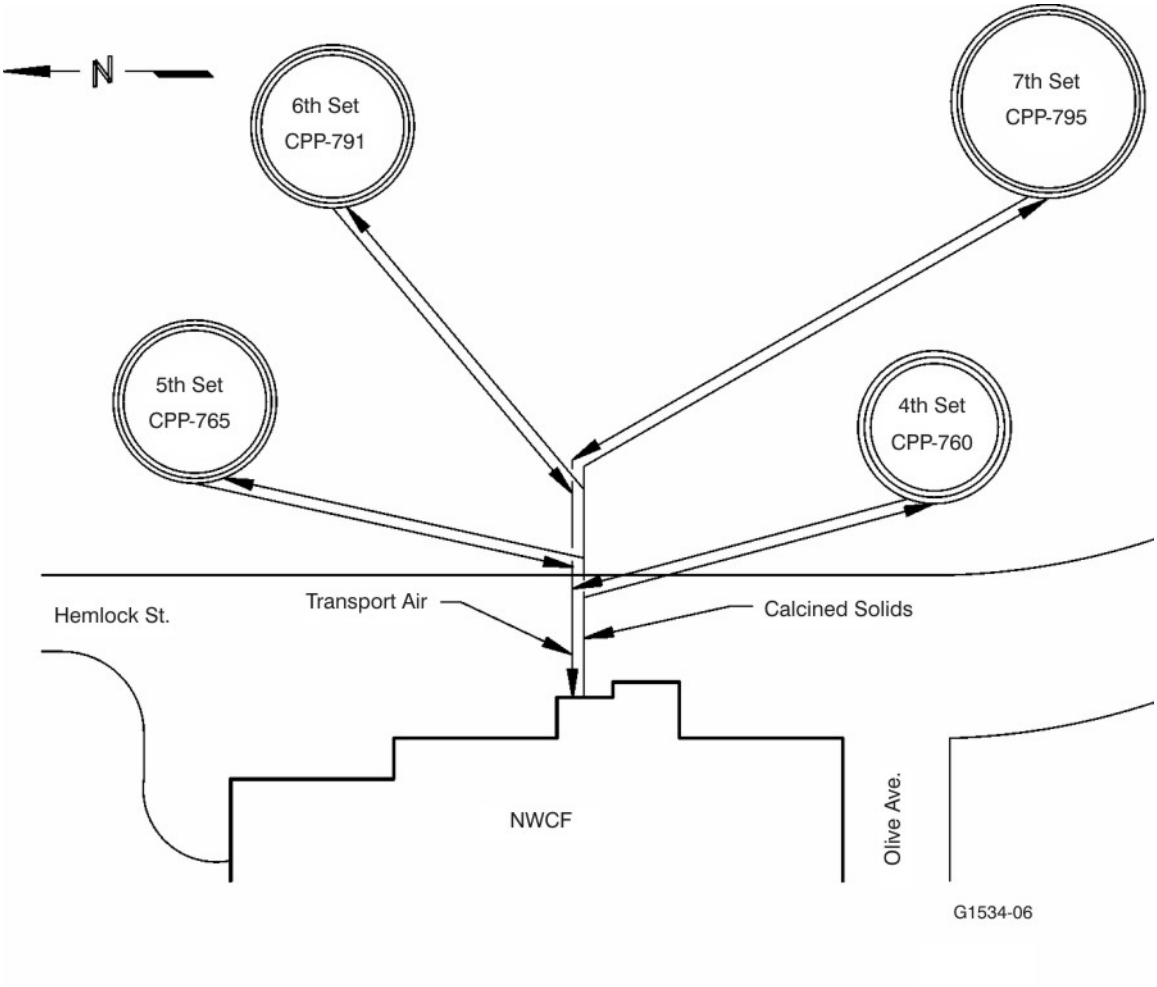

Exhibit D-3. Calcine solids flow.

- Waste piping systems and ancillary equipment associated with Bin Sets 1, 2, and 3 to the point where the transport lines were cut and capped during closure of the WCF. The boundaries for CSSF 1 begin after the cut and cap on Lines 3-TAA-3001 and 3-TAA-3009. The boundaries for CSSFs 2 and 3 begin after the cut and cap on Lines 3-TAA-3032 and 3-TAA-3034 (see Drawings 106576, 118862, and 154129 in Appendix 1).

- Waste piping systems and ancillary equipment associated with Bin Sets 4, 5, 6, and 7. The boundaries for CSSFs 4, 5, 6, and 7 begin with CSSF Valves TAV-WS4-1 and TAV-WS4-2; TAV-WS5-5 and TAV-WS5-4; TAV-WS6-2 and TAV-WS6-5; and TAV-WS7-5 and TAV-WS7-4 shown in Drawings 157798, 158491, 161425 and 009162, respectively, in Appendix 1. Beyond these valves, the "RCRA-Controlled" piping systems and ancillary equipment (including cyclones) are shown in these same drawings, respectively. The bin sets are isolated from the NWCF calciner system by physical devices securing the valves in the closed position on the lines.

D-2a. Existing Tank Systems

The design concept is similar for all the bin sets: vertical, stainless steel bins inside a concrete vault. The vault for CSSF 1 is rectangular and wholly underground. The vaults for CSSFs 2 and 3 are cylindrical, located partially underground and have had gravel berms placed around them. The vaults of CSSFs 4, 5, 6, and 7 are cylindrical, and located partially underground. In addition to housing the bin sets and ancillary equipment, each vault also contains a cyclone cell (for calcine distribution) and instrument room with CSSF monitoring equipment. Exhibit D-4 provides a cutaway view of a typical CSSF vault.

Heat was generated in the CSSF by fission-product decay and was transferred from the bins to the surrounding air. Heat was then conducted from the vault air through the concrete walls surrounding the bins and dissipated to the surrounding soil and air. The temperature within the bins is monitored via thermocouples in various locations and has stabilized to show only ambient temperature fluctuations. Therefore, the ventilation system for cooling was not necessary and was secured closed.

The CSSF is equipped with continuous air monitors (CAMs) to detect loss of bin containment. Any loss of containment would result in radioactive materials being suspended in the vault air that would be detected by the CAMs. The pump within the CAM unit allows monitoring of the vault through recirculation of vault air.

If a CAM alarms a radiological control technician and an operator will have the CAM filter analyzed to determine whether or not a release has occurred. All vaults have been isolated from the atmosphere by mechanically securing the cooling air inlets and outlets closed. As a result there is no motive force to spread contamination outside the vault.

D-2a(1) Assessment of Existing Tank System's Integrity [IDAPA 58.01.05.008 and 58.01.05.012; 40 CFR 264.191 and 270.16(a)]

An assessment prepared by Jason Associates Corporation, *Tank System Integrity Assessment for the Calcined Solids Storage Facility Bin Sets at the Idaho Nuclear Technology and Engineering Center* (see Appendix 2), has determined and provides an independent Professional Engineer certification that the calcine storage bins are adequately designed and have sufficient structural strength and compatibility with the wastes being stored to protect human health and the environment. The facility assessment subsequently determined that the bins in CSSF 1–7 can be permitted for tank storage (7 units) under IDAPA 58.01.05.008, and 40 CFR Part 264, Subpart J requirements.

D-2a(2) Existing Corrosion Protection [IDAPA 58.01.05.008; 40 CFR 264.191(b)(3)]

The tanks and ancillary equipment are contained within concrete vaults. The tank systems do not have RCRA compliant secondary containment, however, a variance from secondary containment is being requested (see Section D-2f). Since the tank systems are located in vaults and the permitted piping is not directly buried in the soil, cathodic protection is not required.

The assessment prepared by Jason Associates Corporation, Tank System Integrity Assessment for the Calcined Solids Storage Facility Bin Sets at the Idaho Nuclear Technology and Engineering Center (see Appendix 2), provides an independent Professional Engineer certification that the CSSF by design, construction, and the nature of the wastes stored are adequate to protect human health and the environment.

D-2b. New Tank Systems [IDAPA 58.01.05.008 and 58.01.05.012, 40 CFR 264.192 and 270.16(f)]

There are no new tank systems associated with the CSSF.

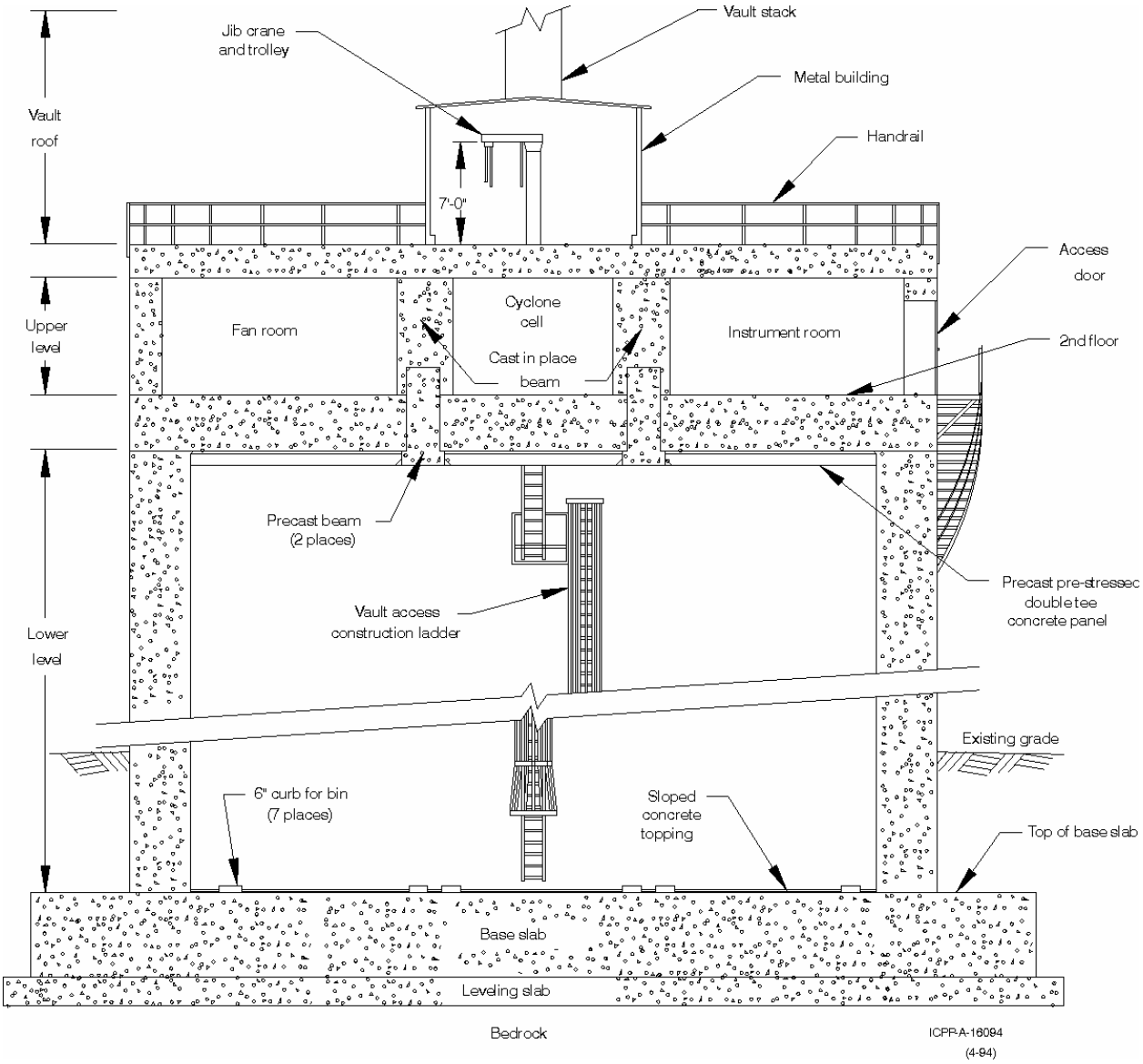

Exhibit D-4. Cutaway view of a typical CSSF vault.

D-2c. Dimensions and Capacity of Each Tank [IDAPA 58.01.05.012; 40 CFR 270.16(b)]

Under appropriate circumstances, Idaho law allows a permittee to maintain confidentiality of information in the Resource Conservation and Recovery Act (RCRA) permitting process. Pursuant to this law, Section D-2c has been removed from this permit application to protect Official Use Only information and will be submitted to the Idaho Department of Environmental Quality under a separate certified package.

Exhibit D-5 and D-6 provide cutaway views of the CSSF 1 - 7.

D-2d. Description of Feed Systems, Safety Cutoffs, Bypass Systems, and Pressure Controls [IDAPA 58.01.05.012; 40 CFR 270.16(c)]

The calcine stored in the CSSF is a solid granular waste form that does not contain free liquids. The bins temperatures are monitored during filling to determine the approximate level of the calcine in each bin.

Safety Cutoffs. There are no safety cutoffs associated with the CSSF.

Bypass Systems. There are no bypass systems associated with the CSSF.

Pressure Controls. Bin vent lines are provided with three pressure relief valves used during bin filling; a high-pressure relief valve, a low-pressure relief valve, and a vacuum relief valve. The high and low pressure relief valves discharge into the vent system exhaust duct, while the vacuum valves allow air to be drawn into the bins.

D-2e. Diagrams of Piping, Instrumentation, and Process Flow [IDAPA 58.01.05.012; 40 CFR 270.16(d)]

A list of drawing numbers and the drawings are located in Appendix 1 of this application.

D-2f. Containment and Detection of Releases [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.16(h) and 264.193(g)]

Regulations allow application for a variance from the secondary containment requirements provided the containment is designed and operated to be at least as effective at protecting human health

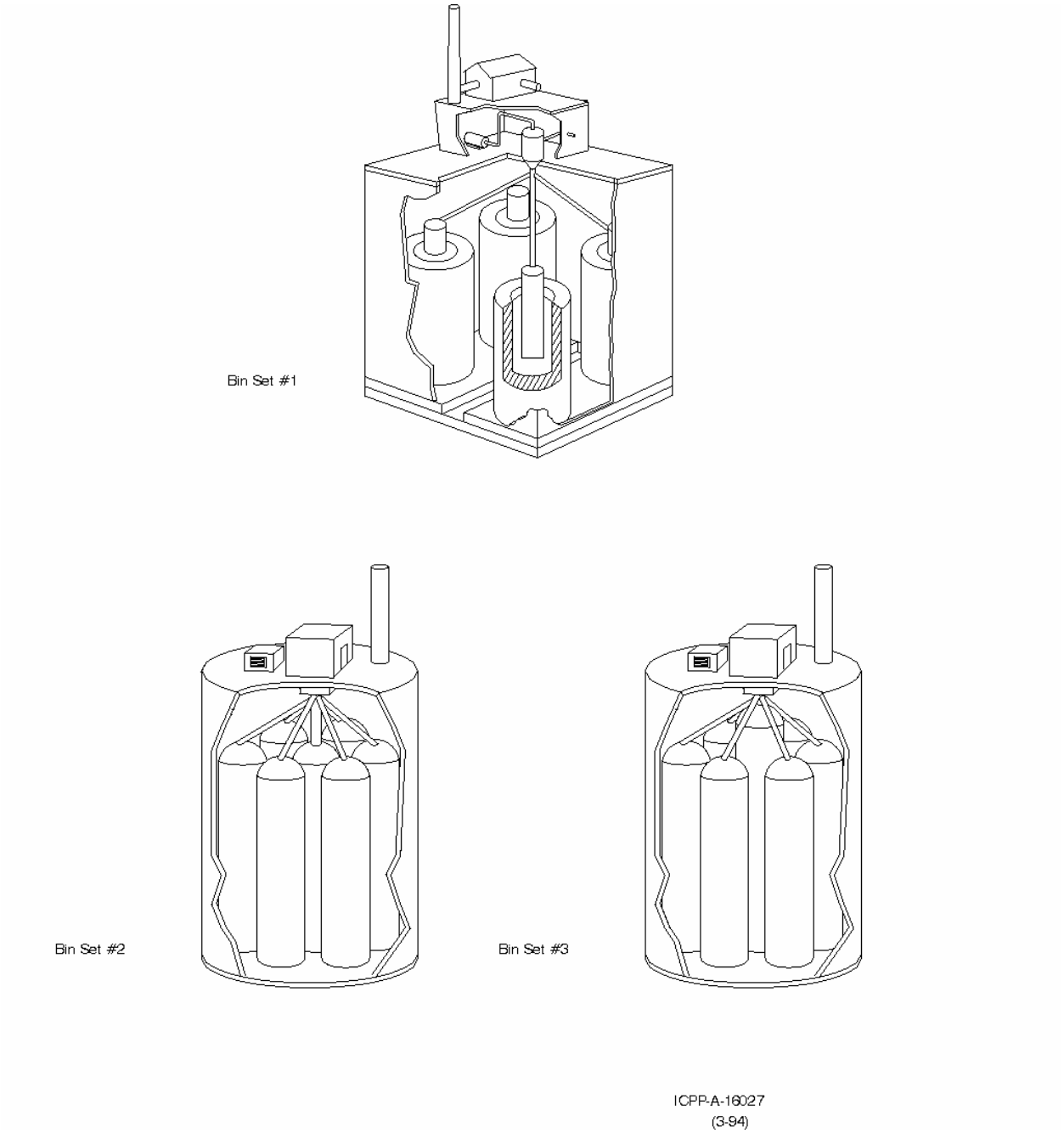

Exhibit D-5. CSSFs 1, 2, and 3 cutaway view.

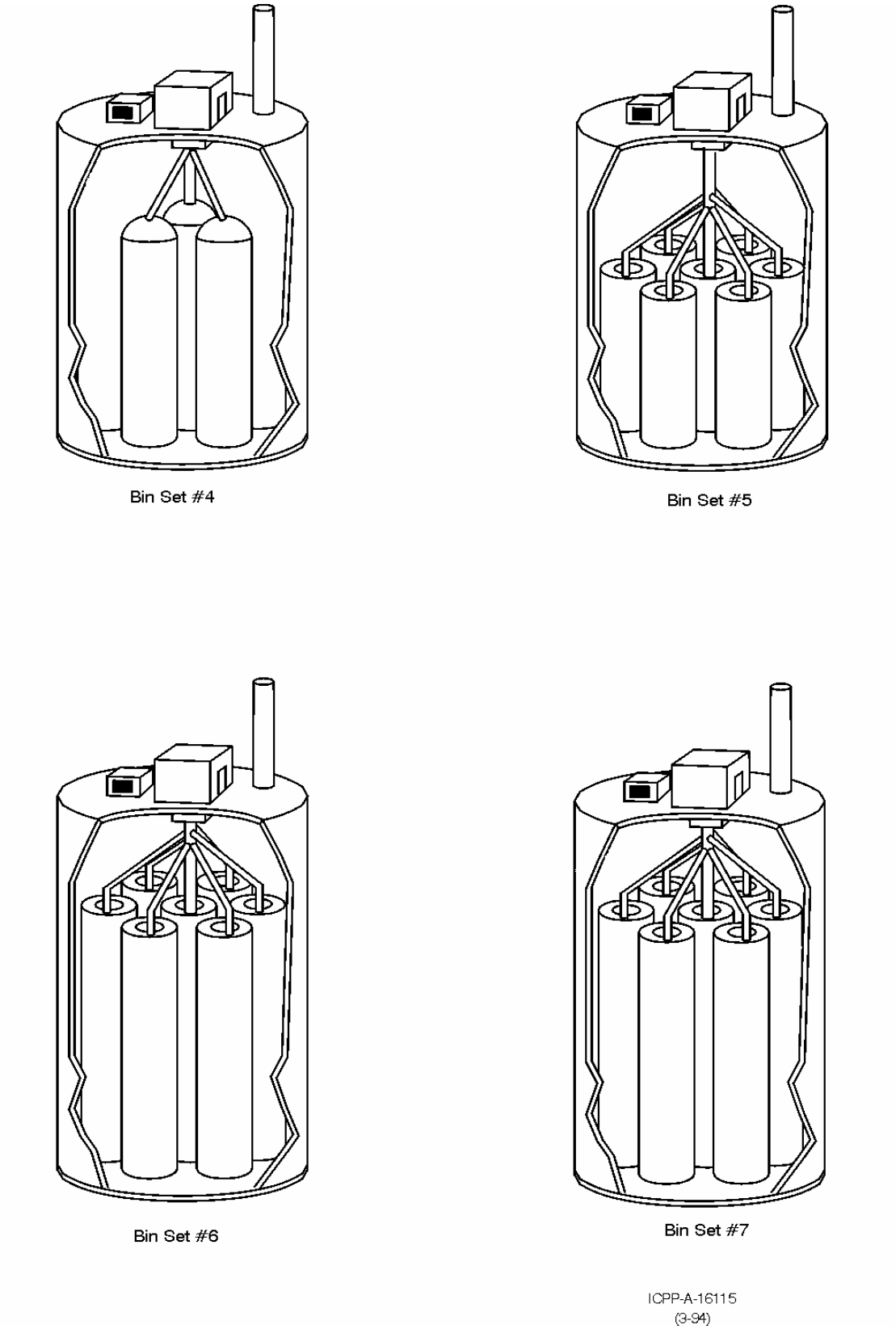

Exhibit D-6. CSSFs 4, 5, 6, and 7 cutaway view.

and the environment as secondary containment. Other considerations include the nature and quantity of the waste and the hydro-geologic setting of the unit.

DOE-ID is applying for a variance from secondary containment requirements of IDAPA 58.01.05.012 (40 CFR 264.193).

D-2f(3) Variance from Secondary Containment Requirements [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.16(h) and 264.193(g)(1)]

D-2f(3)(a) Variance Based on a Demonstration of Equivalent Protection of Groundwater and Surface Water [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.16(h) and 264.193(g)(1)(i)]

D-2f(3)(a)(i) Nature and Quantity of the Waste [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.16(h) and 264.193(g)(1)(i)]

The waste stored in the CSSF is a dry, rounded, granular solid. The bin sets containing the calcine are mechanically isolated to prevent addition of materials to the tanks. The chemical nature of the calcine is described in detail in Section C of this permit application. The quantity of wastes stored in the CSSF is listed in Table 2 of the Section D Supplemental Information.

D-2f(3)(a)(ii) Proposed Alternate Design and Operation of the Containment System [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.16(h) and 264.193(g)(1)(ii)]

In accordance with 40 CFR 264.193(g), a variance may be obtained from the secondary containment requirements if it can be demonstrated that the alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous waste or hazardous constituents into the ground water or surface water at least as effectively as secondary containment during the active life of the tank system. An assessment was prepared in accordance with 40 CFR 264.191 by Jason Associates Corporation, *Tank System Integrity Assessment for the Calcined Solids Storage Facility Bin Sets at the Idaho Nuclear Technology and Engineering Center*, (see Appendix 2), that demonstrates the calcine storage bins and vaults are adequately designed and have sufficient structural strength and compatibility with the wastes being stored to protect human health and the environment at least as effectively as secondary containment.

D-2f(3)(a)(iii) Hydrogeologic Setting of the Facility [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.16(h) and 264.193(g)(1)(iii)]

The hydrology conditions at the INL are addressed in the *DOE Programmatic Spent Nuclear Fuel Management and INEEL Environmental Restoration and Waste Management Programs Final Environmental Impact Statement* (DOE/EIS - 0203F, Volume 1, Appendix B). A copy of this document has already been provided to DEQ.

D-2f(3)(a)(iv) Other Factors Influencing Quantity and Mobility of the Waste [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.16(h) and 264.193(g)(1)(iv)]

The following is a list of factors that would influence the quality and mobility of the hazardous constituents and the potential for them to migrate to ground water or surface water.

- In the calciner processes liquid wastes were injected into a high-temperature (400 to 600^{o} C) air-fluidized bed of granular solids. The liquid portion of the waste evaporated and the solids adhered to the granular material-producing calcine. This calcine is dry stable rounded waste form.

- No free liquids are introduced into the bins. The calcine contains no free liquids as a result of the calcining process. Therefore, an external mechanism would be necessary for transport of the calcine outside of the vaults.

- The vaults are monitored for leaks from the bins using CAMs and for liquid infiltration using sumps that are equipped with level indicators and jets for liquid removal. The engineered barrier is the INTEC boundary. In order for calcine to migrate outside of this boundary a bin would have to leak into the vault. A liquid (which would collect in the vault sump, be detected, and removed) capable of dissolving the calcine would have to be introduced, dissolve the calcine, and then find a path out of the vault to the environment.

- The vaults cooling air inlets and outlets are mechanically isolated from the environment.

- The INTEC is located in the south-central portion of the INL in Butte County. The physical conditions around these buildings are typical for the INL Site, approximately 5,000 ft above mean sea level. The area is relatively flat and receives little rainfall. The mean annual precipitation at the INL is approximately 8.5 in./yr.

- There is little or no potential for damage to wildlife, crops, vegetation, and physical structures caused by a leak from the CSSF due to the robust construction of the bins and vaults.

D-2g. Controls and Practices to Prevent Spills and Overflows [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.16(i) and 264.194(b)]

The level of calcine in the bins is monitored through temperature variances using thermocouples on the bins. Drawings 106574, 118888, 154127, 157814, 158523, 161448, and 168211 in Appendix 1 show the location of the thermocouples in CSSFs 1 through 7, respectively. As calcine is transported to the CSSF, the temperature increases in the bins to correlate with the level of calcine being added. CSSFs 1, 2, 3, 4, 5, and 6 have reached equilibrium temperatures. Thermocouples for these bins are monitored on an annual basis. CSSF 7 is not storing calcine and is not being monitored.

RCRA PART B PERMIT APPLICATION

FOR THE

IDAHO NATIONAL LABORATORY

Volume 22
Idaho Nuclear Technology and Engineering Center

Calcined Solids Storage Facility

Attachment 3 - Section F-1
Security

February 2006

CONTENTS

F. PROCEDURES TO PREVENT HAZARDS

The waste management units addressed in this permit application are designed and operated to minimize exposure of hazardous constituents to the general public, operating personnel, and the environment. This section describes the procedures and equipment/structures used at these units to help prevent, mitigate, or respond to environmental or human health hazards. Also described in this section are the inspection plans and schedules at these units to ensure proper maintenance and operation.

The waste management units addressed in this permit are calcined solids storage in tanks. These units are all located at the Idaho Nuclear Technology and Engineering Center (INTEC). Section D of this application describes the operations of these units.

F-1. Security

F-1a. Security Procedures and Equipment [IDAPA 58.01.05.008 and 58.01.05.012; 40 CFR 264.14 and 270.14(b)(4)]

A security system, physical control procedures, and equipment control access to the INTEC. A security force under contract with the U.S. Department of Energy, Idaho Operations Office (DOE-ID), operates the security system. DOE-ID operates a personnel security clearance program to ensure that employees and visitors have the appropriate clearance.

Full double fencing surrounds the INTEC. Guarded gates, uniformed security police officers (SPOs), or the armed contingent of SPO-II Protective Force (ProForce) with two-way radios, 24-hour camera surveillance, and perimeter lighting are also utilized at the INTEC.

F-1a(1) 24-Hour Surveillance System [IDAPA 58.01.05.008; 40 CFR 264.14(b)(1)]

Security at the INTEC is maintained by a staff of trained SPOs, who monitor the entry and egress of people and material from the INTEC facility. The main INTEC guard gate at the west side of the INTEC is either staffed with SPOs or access controlled by keycard 24 hours a day, 7 days a week. There are two other gates into the INTEC, and they are either locked or staffed with SPOs. There are surveillance cameras strategically located to provide remote surveillance capability of specific areas of the INTEC. The ProForce performs other security functions within the plant premises, including patrolling the perimeter fence and areas throughout the INTEC on a 24-hour basis.

F-1a(2) Barrier and Means to Control Entry

F-1a(2)(a) Barrier [IDAPA 58.01.05.008; 40 CFR 264.14(b)(2)(I)]

The INTEC facility is located approximately 42 air miles west of the largest nearby population area, Idaho Falls, Idaho. The entire INTEC is enclosed within a double chain-link fence. The outer fence serves as an animal control fence. The inner fence is topped with barbed wire outriggers to prevent unauthorized entry. There are gates in the perimeter fences, but only three guarded gates. These gates are identified with the Guard Post (building) where they are located. The Guard Posts are numbered P-501 (CPP-1686), P-507 (CPP-661), and P-521 (CPP-697). The other gates are locked but can be opened by patrols when requested.

F-1a(2)(b) Means to Control Entry [IDAPA 58.01.05.008; 40 CFR 264.14(b)(2)(ii)]

Security at the INTEC is also maintained by administrative controls. As discussed in Sections F-1a(1) and F-1a(2)(a), the INTEC is provided with physical controls such as a 24-hour surveillance system, keycard access, and locked gates.

To enter the INTEC, employees must have a picture identification badge or equivalent as per security procedures requirements, and complete the Idaho National Laboratory (INL) initial employee training.

Employees escort visitors when entering restricted areas of the INTEC. The employee must have a picture identification badge or equivalent. The employee meets the visitor at the guard gate and signs him or her in on the INTEC entrance log, verifying that the visitor will remain at all times with a badged employee. Temporary badges are issued to allow access. These entry procedures into the INTEC prevent access into Hazardous Waste Management Act (HWMA)/Resource Conservation and Recovery Act (RCRA)-regulated units by the general public and visitors.

For accountability reasons, all persons entering the INTEC must either enter through the card reader turnstile as they enter, or sign the INTEC entrance log. When personnel leave the INTEC, they exit through the card reader turnstiles or sign out at the guard gate. In certain emergency situations the turnstiles could be set to the freewheel mode, disabling the card reader. Accountability would then be made at the staging areas or in the evacuation buses.

F-1a(3) Warning Signs [IDAPA 58.01.05.008; 40 CFR 264.14(c)]

Warning signs that are visible and legible from at least 25 ft are posted at guard gates and on the fence around the INTEC. Entrances into RCRA-regulated storage or treatment areas will have, at a minimum, signs reading "**DANGER**--Unauthorized Personnel Keep Out."

RCRA PART B PERMIT APPLICATION

FOR THE

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Attachment 4 - Section F-2
Inspection Schedule

February 2006

CONTENTS

APPENDIX

F-2. Inspection Schedule

F-2a. General Inspection Requirements [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.14(b)(5), 264.15(a) and (b), 264.33, and 264.195]

The schedules for inspecting equipment vital in preventing, detecting, and responding to environmental or human health hazards are summarized in Appendix F-1. Results of inspections are recorded on forms or operating logs. Examples of inspection forms are also included in Appendix F-1. Copies of inspection records are placed in the appropriate RCRA inspection logs located in the NWCF shift office. The originals are then sent to a designated approved records storage area and are retained for the life of the regulated unit. These records include the time and date of the inspection, the printed name and signature of the inspector, a notation of observations made, and the date and nature of any repairs or other remedial actions. The inspection forms show the inspections, frequencies, and responsibilities. Examples of these forms are provided in Appendix F-1. Other, similar forms containing the same substantive information may be used to document these inspections.

F-2a(1) Types of Problems [IDAPA 58.01.05.008; 40 CFR 264.15(b)(3)]

The inspection schedule in Appendix F-1 list types of problems looked for during inspections.

F-2a(2) Frequency of Inspection [IDAPA 58.01.05.008; 40 CFR 264.15(b)(4), (c), and (d)]

The frequency of inspections or observations, and the inspecting organization are listed in the schedule in Appendix F-1.

If a problem is found during an inspection , it is reviewed and confirmed by applicable supervision or system engineer and appropriate actions are taken. Engineers and facility personnel will work together to decide whether a remedial action is required, and plan the required action as necessary. Remedial actions are documented.

F-2b. Specific Process Inspection Requirements

F-2b(2) Tank System Inspection [IDAPA 58.01.05.008; 40 CFR 264.195 and 40 CFR 264.196]

Assessments of the tank systems will be performed on the rare occasion when necessary (e.g., after a significant earthquake) using a remote camera. The assessment will consist of visual inspections of accessible portions of the exterior of the tanks for leaks, corrosion, and deterioration of tanks and vaults.

The results of these inspections are documented in the facility's inspection records. The records are maintained at INTEC or other INL storage locations. The inspections will be recorded on inspection forms.

F-2b(2)(a) Certification for Tank Repairs [IDAPA 58.01.05.008; 40 CFR 264.196(f)]

If major repairs are made to the tank systems addressed in this permit application, the repairs will be certified by an independent, qualified, registered professional engineer (PE).

F-2b(2)(b) Tank System External Corrosion and Releases [IDAPA 58.01.05.008; 40 CFR 264.195(b)(1)]

The bins are contained in vaults that are constructed of concrete. The associated ancillary equipment is also within concrete containment.

The bins are monitored using instrumentation to detect leaks from the system. Confined spaces and radiation levels prevent visual inspections of these items on a daily basis. Inspections of the vaults will be conducted after an event such as a significant earthquake using a remote camera.

The aboveground portions of the tank system that can be inspected include the roofs of the bin set vaults, for bin sets 1 through 3 the earthen berms, and for bin sets 4 through 7 the exterior walls of the vaults. These portions are inspected for deterioration, spalling, or staining as appropriate. These inspections will be performed per the inspection schedule in Appendix F-1.

F-2b(2)(d) Tank System Overfilling Control Equipment [IDAPA 58.01.05.008; 40 CFR 264.195(a)]

The bin sets are monitored and operated through panel-mounted instrumentation. Sump levels and CAM alarms are also monitored on the Distributed Control System at the NWCF except for Bin Set 4. If there is a spill, leak, or process parameter outside of its normal range, an operator investigates, and notifies supervision.

For Bin Set 4, the sump level and CAM indicators and alarms are monitored locally in the instrument building (CPP_658). An increased sump level or alarm would be noted during daily operational readings.

The RCRA-mandated overfill and leak detection inspections are accomplished by monitoring process instrumentation that detects spills or leaks within a vault (see Appendix F-1 for inspection forms).

F-2b(2)(e) Tank System Monitoring and Leak Detection Equipment [IDAPA 58.01.05.008; 40 CFR 264.195(b)(2)]

The bin sets are equipped with CAMs to detect loss of bin containment. Any loss of containment would result in radioactive materials being suspended in the vault air that would be detected by the CAMs.

The RCRA-mandated overfill and leak detection inspections are accomplished by monitoring process instrumentation that detects spills or leaks within a vault (see Appendix F-1 for inspection forms).

F-2b(2)(g) Tank Condition Assessment [IDAPA 58.01.05.008; 40 CFR 264.195(b)(1)]

Bins and vaults are inspected or monitored for spills by monitoring the CAMs. In addition, a tank system integrity assessment titled *The Tank System Integrity Assessment for the Calcined Solids Storage Facility Bin Sets at the Idaho Nuclear Technology and Engineering Center*, prepared and certified by Jason Associates Corporation (see Appendix B in Section D), has determined that the calcine storage bins are adequately designed and have sufficient structural strength and compatibility with the wastes being stored to protect human health and the environment. The bin sets are not visually inspected on a daily basis due to confined spaces and high radiation levels.

Appendix F-1. Inspection Schedule and Examples of Forms for the CSSF

CSSF INSPECTION SCHEDULE

Equipment Inspection	Types of Problems or Observations	Frequency	Inspecting Organization
MONITORING EQUIPMENT INSPECTION			
Distributive Control System (DCS)	Internal Automatic Diagnostics	Continuously	Shift Operations
Panel-Mounted Instrumentation	Pens not inking, not operating, erratic readings	Daily	Shift Operations
CAMs	Operating, Not Alarming	Daily	Shift Operations
FIRE PROTECTION SYSTEM INSPECTIONS			
Portable Fire Extinguishers	Physical damage, charge, accessibility and sealed	Monthly	Shift Operations
EMERGENCY EQUIPMENT INSPECTIONS			
Plant Voice Paging and Evacuation Alarm System	Operation, Coverage	Monthly	Plant Utilities/Operations
Communications Devices/Building Paging System	Operation at each Bin Set	Daily	Shift Operations
OPERATING AND STRUCTURAL EQUIPMENT			
Access warning signs	Warning signs in place – inside the INTEC facility Warning signs in place – INTEC perimeter fence and guard gates	Weekly Semiannually	Shift Operations Shift Operations
Exterior structures roofs, external walls, berms	deterioration, spalling, or staining as appropriate	Annually	Shift Operations

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06/01/04
REV. 3

RCRA INSPECTION INDEX

Insp. Date	Form Number Used and Title	Remedial Actions	Date Completed	Sent to Records (Signature/Date)
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		
		Y N		

RCRA CSSF TANK OVERFILL AND LEAK DAILY FACILITY INSPECTIONS

Previous Week's Inspection Checked (Initials): _____

The Open RCRA Remedials Tracking Book Index for this form has been compared to the previous week's form, the index has been updated, and the current open RCRA Remedials have been recorded on the tracking table. (Initials:) _____

Date: _____ Through _____		**Time:**							
Area/Item	**Normal Condition**	**Off Spec. Condition**	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**	**Sun**
Solids Storage No. 1									
CAM-WCS-01	Operating **(1)**	Not Operating	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**
	0–50,000 cpm	On Alarm	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**
L-WCS-115-1	0–9 in. WC	>9 in. WC							
Signs in place? **(4)**	Yes	No						Yes/No	
Radio works?	Yes	No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Solids Storage No. 2									
CAM-WCS-02	Operating **(1)**	Not Operating	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**
	0–50,000 cpm	On Alarm	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**
L-WCS-742-1	0–45 in. WC	>45 in. WC							
Signs in place? **(4)**	Yes	No						Yes/No	
Radio works?	Yes	No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Solids Storage No. 3									
CAM-WCS-03	Operating **(1)**	Not Operating	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**
	0–50,000 cpm	On Alarm	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**
L-WCS-746-1	0–45 in. WC	>45 in. WC							
Signs in place? **(4)**	Yes	No						Yes/No	
Radio works?	Yes	No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Solids Storage No. 4									
CAM-WS4-01	Operating **(1)**	Not Operating	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**
	0–50,000 cpm	On Alarm	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**
LIA-WS4-1	0–6 in. WC	>6 in. WC							
Signs in place? **(4)**	Yes	No						Yes/No	
Phone works?	Yes	No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No
Solids Storage No. 5									
CAM-WS5-02	Operating **(1)**	Not Operating	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**
	0–50,000 cpm	On Alarm	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**
L-WS5-1	0–20 in. WC	>20 in. WC							
Signs in place? **(4)**	Yes	No						Yes/No	
Phone works?	Yes	No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No

RCRA CSSF TANK OVERFILL AND LEAK DAILY FACILITY INSPECTIONS

Area/Item	Normal Condition	Off Spec. Condition	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Solids Storage No. 6									
R-WS6-791-1	Operating **(1)**	Not Operating	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**	Yes/No **(2)**
	0–50,000 cpm	On Alarm	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**	Yes/No **(3)**
L-WS6-1	0–20 in. WC	>20 in. WC							
Signs in place? **(4)**	Yes	No						Yes/No	
Phone works?	Yes	No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No	Yes/No

(1) The CAM is operating if: (a) the MASTER ON light is lit, (b) the yellow loss-of-signal light on top of the CAM is not lit, (c) the flow rate indicated by the Photohelic on the side of the CAM is between the high and low flow rate setpoint indicators, and (d) the RCTs have not tagged the CAM as inoperable.

(2) Circle Yes if the CAM is operating.

(3) Circle Yes if the count rate is within the normal range (not on alarm). Circle No if the CAM is not operating.

(4) "Danger-Unauthorized personnel keep out" signs.

Form Review	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Supervision Initials:							

Day	Inspector's Name (Print)	Inspector's Signature	Inspection Completed Date	Nature of Any Repairs or Other Remedial Actions	Repairs/Remedial Actions Complete or Not Required Supervision Signature/Date
Mon					
Tue					
Wed					
Thu					
Fri					
Sat					
Sun					

Comments: _____

RCRA CSSF TANK OVERFILL AND LEAK DAILY FACILITY INSPECTIONS

Open RCRA Remedials on this form:

Footnote Letter	Tracking Number	Date Remedial was Identified	Deficiency Description/Comments

RCRA CSSF VAULT INSPECTIONS

Previous Inspection Checked (Initials): _____ Vault Inspected: _____ Date: _____ Time: _____

The Open RCRA Remedials Tracking Book Index for this form has been compared to the previous form, the index has been updated, and the current open RCRA Remedials have been recorded on the tracking table. (Initials) _____

Equipment/Area Inspected	Types of Problems/Inspection Items	Observations	Nature of Any Repairs or Other Remedial Actions	Completion Date for Repairs/Remedial Actions
Sump	Erosion, cracks, debris, settling, spills			
Sump jet	Steam leaks, debris			
Concrete floor	Cracks, deterioration, uneven settling, spills			
Concrete walls	Cracks, deterioration, settlement, paint			
Tank exteriors	Corrosion, erosion, leaks, discoloration, buckles, bulges			
Piping	Corrosion, erosion, leaks, loose or corroded connections			
Valves	Leaks (internal and external), corrosion			
Ladders	Corroded, damaged, poor structural stability			

Comments: _____

RCRA CSSF VAULT INSPECTIONS

Open RCRA Remedials on this form:

Footnote Letter	Tracking Number	Date Remedial was Identified	Deficiency Description/Comments

Inspector's Name (Print): _____

Inspector's Signature: _____

Inspection Completed; Shift Supervisor's Signature: _____

Remedial Actions Completed or Not Required; Shift Supervisor's Signature: _____

RCRA NWCF/CSSF MONTHLY EMERGENCY EQUIPMENT AND VALVE PL-122-5 CHECKS

Previous Month's Inspection Checked (Initials): _____ Date: _____ Time: _____

The Open RCRA Remedials Tracking Book Index for this form has been compared to the previous month's form, the index has been updated, and the current open RCRA Remedials have been recorded on the tracking table. (Initials): _____

CSSF Fire Extinguishers

Check for accessibility, damage, seal, and gauge indication in green (if equipped).

Item	Location	Requirements Met		Problem(s) Found
1	SS I, Instrument Bldg.	Yes	No	
2	SS II, Instrument Bldg.	Yes	No	
3	SS III, Instrument Bldg.	Yes	No	
4	SS IV, Instrument Bldg.	Yes	No	
5	SS V, Roof	Yes	No	
6	SS V, Instrument Bldg.	Yes	No	
7	SS VI, Instrument Room	Yes	No	
8	SS VI, Roof	Yes	No	

NWCF Fire Extinguishers

Check for accessibility, damage, seal, and gauge indication in green (if equipped).

Item	Location	Requirements Met		Problem(s) Found
9	Room 503 West wall	Yes	No	
10	Corridor 501 North wall	Yes	No	
11	Room 417 East wall	Yes	No	
12	Room 415 North wall	Yes	No	
13	Room 418 Southwest wall	Yes	No	
14	Room 418 North wall	Yes	No	
15	Room 442 Northeast wall	Yes	No	
16	Room 442 South wall	Yes	No	
17	Room 423 East wall	Yes	No	
18	Corridor 424 East wall	Yes	No	
19	Room 601 East wall	Yes	No	
20	Room 426 West wall	Yes	No	
21	Room 427 West wall (outside dock)	Yes	No	
22	Room 427 Southwest wall	Yes	No	
23	Room 428 East wall	Yes	No	
24	Room 428 North corner	Yes	No	
25	Room 430 North wall	Yes	No	
26	Room 432 Northwest wall (there are 2 at this location)	Yes	No	
27	Corridor 409 South wall	Yes	No	
28	Room 433 West wall	Yes	No	
29	Room 438 East wall	Yes	No	
30	Room 438 Southwest wall	Yes	No	
31	Room 439 South wall	Yes	No	

RCRA NWCF/CSSF MONTHLY EMERGENCY EQUIPMENT AND VALVE PL-122-5 CHECKS

Item	Location	Requirements Met		Problem(s) Found
32	Corridor 401 East wall	Yes	No	
33	Corridor 441 North wall	Yes	No	
34	Room 411 West wall	Yes	No	
35	Room 318 Southeast wall	Yes	No	
36	Room 318 West wall	Yes	No	
37	Room 303 Southwest wall	Yes	No	
38	Room 303 West wall	Yes	No	
39	Room 303 Northeast wall	Yes	No	
40	Room 311 Northeast wall	Yes	No	
41	Room 311 Northwest wall	Yes	No	
42	Room 312 South wall	Yes	No	
43	Room 317 North wall	Yes	No	
44	Room 201 South wall	Yes	No	
45	Room 201 Southwest wall	Yes	No	
46	Room 209 East wall	Yes	No	
47	Room 211 East wall	Yes	No	
48	Room 211 West wall	Yes	No	
49	Room 212 Northeast wall	Yes	No	
50	Room 212 Northwest wall	Yes	No	
51	Room 217 Northeast wall	Yes	No	

NWCF Fire Hose Connection Stations

Check for accessibility and leakage.

Item	Location	Requirements Met		Problem(s) Found
1	Room 409 South wall	Yes	No	
2	Room 424 East wall	Yes	No	
3	Room 428 Northwest wall	Yes	No	
4	Room 428 East wall	Yes	No	
5	Room 418 Northwest wall	Yes	No	
6	Room 411 West wall	Yes	No	
7	Room 318 Northwest wall	Yes	No	
8	Room 312 Southeast wall	Yes	No	
9	Room 311 Northeast wall	Yes	No	
10	Room 311 Northwest wall	Yes	No	
11	Room 303 West wall	Yes	No	
12	Room 201 West wall	Yes	No	
13	Room 211 East wall	Yes	No	
14	Room 212 Northeast wall	Yes	No	
15	Room 212 Northwest wall	Yes	No	

RCRA NWCF/CSSF MONTHLY EMERGENCY EQUIPMENT AND VALVE PL-122-5 CHECKS

Safety Showers/Eyewash Fountains

Check for leaks, accessibility, supply valve open, and that PM tag is current.

Level	Location	Equipment No.	Requirements Met?	Problem(s) Found
First	Room 415	SSW-NWCF-2 EFN-NWCF-2	Yes/No	
	Room 501	SSW-NWCF-3 EFN-NWCF-3	Yes/No	
	Room 418	SSW-NWCF-5 EFN-NWCF-5	Yes/No	
	Room 442	SSW-NWCF-13 EFN-NWCF-13	Yes/No	
	Room 427	SSW-NWCF-10 EFN-NWCF-10	Yes/No	
	Room 431	SSW-NWCF-14 EFN-NWCF-14	Yes/No	
	Room 429	SSW-NWCF-1 EFN-NWCF-1	Yes/No	
		SSW-NWCF-11 EFN-NWCF-11	Yes/No	
Second	Room 318	SSW-NWCF-7 EFN-NWCF-7	Yes/No	
	Room 303	SSW-NWCF-6 EFN-NWCF-6	Yes/No	
	Room 312	SSW-NWCF-0 EFN-NWCF-0	Yes/No	
Third	Room 201	SSW-NWCF-8 EFN-NWCF-8	Yes/No	
	Room 211	SSW-NWCF-9 EFN-NWCF-9	Yes/No	

Stretchers

Level	Location	Stretcher in Location?	Problem(s) Found
First	Room 409 – North wall	Yes/No	
	Room 411 – Northwest wall	Yes/No	
	Room 430 – South wall	Yes/No	
Second	Room 317 – South wall	Yes/No	
Third	Room 209 – South wall	Yes/No	

RCRA NWCF/CSSF MONTHLY EMERGENCY EQUIPMENT AND VALVE PL-122-5 CHECKS

Spill Control Cabinets

Place "√" if minimum quantity (or greater) is present. Notify supervision of any usage so that cabinet can be restocked.

If seal no. is the same and the seal has not been broken, an inventory need not be taken.

Item	Minimum Quantity Required	Room 415	Room 431	Room 317	Room 303	Room 209
Non-rad acid suits (green) **(1)** (These are reusable)	6 pair					
Acid Boots **(1)**	6 pair (2 pair, size 15)					
Rad Acid Suits **(1)**	6					
Acid Gloves (neoprene) **(1)**	12 pair					
Splash Goggles	4					
Plastic Buckets	2					
Spill Control Pillows	24					
Hazardous Material Pigs	12					
Hazardous Material Bags **(1)**	12					
Mop Handles	1					
Mop Heads	3					
Safety Rope	25 ft					
Signs (5 total)	4 "Danger-Acid Spill" 1 "Chemical Spill"					
pH Paper	2 boxes					
Duct Tape (white) **(1)**	2 rolls					
Shovel (flat head)	1					
Smear Paper and Envelopes	1 box					
Pencils, Grease Pencils	2 each					
Radiological Tags, Signs	5 each					
Acid Neutralizer	5 gallon bucket					
Caustic Neutralizer	5 gallon bucket					
Radiation Rope or Ribbon	25 feet					
Previous Inspections Seal Number for Cabinet						
Seal Number for Cabinet						

(1) Replace these items every January and July.

Equipment/Item Inspected	Types of Problems/Inspection Items	Observations	Nature of Any Repairs or Other Remedial Actions	Completion Date for Repairs/Remedial Actions
Safety showers/ eyewashes	Leaks, accessibility, supply valve open, PM tag current			
Spill control cabinets	Equipment inventory			

Valve Number	Normal Condition	Off Spec. Condition	Observations	Nature of Any Repairs or Other Remedial Actions	Completion Date for Repairs/Remedial Actions
PL-122-5	Closed	Open	Closed/Open		

RCRA NWCF/CSSF MONTHLY EMERGENCY EQUIPMENT AND VALVE PL-122-5 CHECKS

Item No.	Action(s) Taken to Correct Problem(s) Found	Action Date	Completion Date

Comments: _____

_____

_____

_____

Open RCRA Remedials on this form:

Footnote Letter	Tracking Number	Date Remedial was Identified	Deficiency Description/Comments

Inspector's Name (Print): _____

Inspector's Signature: _____

Inspection Completed; Shift Supervisor's Signature: _____

Remedial Actions Completed or Not Required;
Shift Supervisor's Signature: _____

RCRA HLW CELL INSPECTIONS

Previous Inspection Checked (Initial): _____

The Open RCRA Remedials Tracking Book Index for this form has been compared to the previous form, the index has been updated, and the current open RCRA Remedials have been recorded on the tracking table. (Initials): _____

Facility: _____ Cell Inspected: _____ Date: _____ Time: _____

A full inspection of the cell will be conducted when the cell is initially entered. If the cell remains open for more than one day (24 hours), and cell conditions have not changed, an abbreviated cell inspection will be performed using Form INTEC-9123A each day the cell is re-entered.

Equipment/Area Inspected	Types of Problems/Inspection Items	Observations	Nature of Any Repairs or Other Remedial Actions	Completion Date for Repairs/Remedial Actions
Sump	Erosion, cracks, debris, settling, spills			
Sump jet	Steam leaks, debris			
Concrete floor (stainless lined)	Cracks, gaps, deterioration, uneven settling, spills			
Concrete walls (stainless lined)	Cracks, gaps, deterioration, settlement			
Concrete floor (epoxy painted)	Cracks, gaps, deterioration, uneven settling, spills, paint			
Concrete walls(1)	Cracks, deterioration, settlement, paint			
Tank exteriors	Corrosion, erosion, leaks, cracks, gaps, discoloration, buckles, bulges			
Piping	Corrosion, erosion, leaks, cracks, gaps, loose or corroded connections			
Valves	Leaks (internal and external), corrosion			
Cell door	Deterioration, corrosion, will not close			
Pumps (if any)	Corrosion, erosion, leaks, deterioration, loose connections			
Filter unit exterior	Deterioration, corrosion, bulges, buckles, leaks			
Used HEPA filters	Corrosion, deterioration			

1. The WL-161, Condensate, and Pump Pit Cells at INTEC-604 are known to have defects in the concrete walls above the stainless-steel liner. When these cells are inspected, compare the photos located in an album in the Waste Processing control room to the current condition. If no change is noted, write NO CHANGE in the Observations section. No remedial actions will be necessary. If additional deterioration is noted, write this observation down and forward to the facility support engineer for further evaluation. Remedial action for this observation will be evaluated and repairs completed, if warranted.

RCRA HLW CELL INSPECTIONS

Comments: _____

_____

_____

_____

_____

Open RCRA Remedials on this form:

Footnote Letter	Tracking Number	Date Remedial was Identified	Deficiency Description/Comments

Containerized Hazardous Waste Stored at Location?	Inspection if Waste is Stored at Location	Normal Condition	Off-Spec Condition	Inspection	Comments
Yes/No[(2)]	Containers leaking?	No	Yes	No/Yes	
	Containers deteriorating?	No	Yes	No/Yes	
	Containers closed?	Yes	No	Yes/No	
	Hazardous liquids on floor?	No	Yes	No/Yes	
	Deterioration visible [(3)]	No	Yes	No/Yes	

(2) Inspection is not required if containerized hazardous waste is not stored at location. Inspection is required on a weekly basis if containerized hazardous waste is stored at location.

(3) Inspect stainless steel containment liner on floor and walls for cracks, gaps, corrosion, and deterioration.

Inspector's Name (Print): _____

Inspector's Signature: _____

Inspection Completed; Shift Supervisor's Signature: _____

Remedial Actions Completed or Not Required; Shift Supervisor's Signature: _____

ABBREVIATED RCRA CELL INSPECTION

Previous Inspection Checked (Initials): _____ Cell Inspected: _____ Date: _____ Time: _____

The Open RCRA Remedials Tracking Book Index for this form has been compared to the previous inspection form, the index has been updated, and the current open RCRA Remedials have been recorded on the tracking table (Initials): _____

Equipment/Area Inspected	Types of Problems/Inspection Items	Observations	Nature of Any Repairs or Other Remedial Actions	Completion Date for Repairs/Remedial Actions
Sump(s), floor, walls, exterior tank surfaces, piping, valves, and pumps that are visible, and waste containers [1]	Erosion, deterioration, cracks, settling, leaks, spills, debris, or corrosion			

1. Abbreviated inspections may be performed by several means (e.g., cameras, observing the area through the cell entryway, walkthroughs, etc.). Walkthrough inspections completed by personnel performing work within the cell will be limited to those areas encountered while traversing between the cell entrance and the specific work location.

Date of Last in-Cell Container Inspection	Containerized Hazardous Waste Stored at Location?	Inspection if Waste is Stored at Location	Normal Condition	Off-Spec Condition	Inspection	Comments
	Yes/No[(2)]	Containers leaking?	No	Yes	No/Yes	
		Containers deteriorating?	No	Yes	No/Yes	
		Containers closed?	Yes	No	Yes/No	
		Hazardous liquids on floor?	No	Yes	No/Yes	
		Deterioration visible [(3)]	No	Yes	No/Yes	

2. Inspection is not required if containerized hazardous waste is not stored at location. Inspection is required on a weekly basis if containerized hazardous waste is stored at location.
3. Inspect stainless steel containment liner on floor and walls visible through shield window for cracks, gaps, corrosion, and deterioration.

ABBREVIATED RCRA CELL INSPECTION

Comments: _____

Footnote Letter	Tracking Number	Date Remedial was Identified	Deficiency Description/Comments

Inspector's Name (Print) _____

Inspector's Signature _____

Inspection Completed:
Shift Supervisor's Signature _____

Remedial Actions
Completed or Not Required:
Shift Supervisor's Signature _____

RCRA HLW MONTHLY VOICE PAGING/EVACUATION SYSTEM INSPECTIONS

This data sheet is the current revision date per the current Form Index.

Signature / Date

Previous Inspection for this Facility Checked (Initials): _____ Date: _____ Time: _____

The Open RCRA Remedial Tracking Book Index for this form has been compared to the previous month's form, the index has been updated, and the current open RCRA Remedials have been recorded on the tracking table. (Initials): _____

Facility[(1)]: _____

Inspection Performed: Voice Paging/Evacuation System Operational Yes/No[(1)(2)]

NOTE: *The Voice Paging System and the Evacuation System use the same speakers.*

[(1)] Areas that need to be inspected are:

Facility	Areas to Check
NWCF	All levels in the facility (including the Decon area)
Waste Side	Tank Farm, INTEC-604, LET&D, INTEC-641, INTEC-1683
INTEC-1617/1619	Areas in INTEC-1617 and INTEC-1619

[(2)] Although individual speakers may not be inspected, any speaker found not to be operating properly must be listed in the "Remedial Action" table below.

List items not operating properly (if any):

Item Not Operating Properly	Nature of any Repairs or Other Remedial Actions	Completion Date for Repairs/Remedial Actions

Comments: _____

ABBREVIATED RCRA CELL INSPECTION

Open RCRA Remedials on this form:

Footnote Letter	Tracking Number	Date Remedial was Identified	Deficiency Description/Comments

Inspector's Name (Print): _____

Inspector's Signature: _____

Inspection Completed; Shift Supervisor's Signature: _____

Remedial Actions Completed or NOT Required;
Shift Supervisor's Signature: _____

RCRA PART B PERMIT APPLICATION

FOR THE

IDAHO NATIONAL LABORATORY

Volume 22
Idaho Nuclear Technology and Engineering Center

Calcined Solids Storage Facility

Attachment 6 - Sections F-3, F-4, and F-5
Procedures to Prevent Hazards

February 2006

CONTENTS

F-3. Documentation of Preparedness and Prevention Requirements

F-3a. Equipment Requirements [IDAPA 58.01.05.012 and 58.01.05.008; 264.32]

F-3a(1) Internal Communications [IDAPA 58.01.05.008; 40 CFR 264.32(a) and 264.34]

In any event (fire, explosion or release), the person involved/discovering can activate the nearest manual alarms and use communication devices (such as telephones, hand-held two way radios) to summon assistance, and make notifications to the plant shift supervisor/Emergency Action Manager (EAM) and/or the INL Fire Department. The INTEC EAM will ensure that all facility personnel are being, or have been, notified of the imminent or actual emergency situation, including a confirmation call to the Warning Communications Center (WCC), to verify the INL Fire Department is responding.

The CSSF buildings are equipped with communication devices (telephones, hand-held two-way radios, etc.) capable of summoning emergency assistance. The personnel involved in the operation have immediate access to emergency communication devices. If there is ever just one employee at the TSD while the unit is operating, that employee will be provided immediate access to a communication device for summoning emergency assistance.

F-3a(2) External Communications [IDAPA 58.01.05.008; 40 CFR 264.32(b)]

The CSSF buildings are equipped with communication devices (e.g., telephones, hand-held two-way radios, etc.) capable of summoning emergency assistance. The INTEC EAM and the WCC use communication devices that provide direct access to external emergency response agencies.

F-3a(3) Emergency Equipment [IDAPA 58.01.05.008; 40 CFR 264.32(c)]

The emergency/safety equipment located in the buildings associated with the CSSF includes the following:

- Portable fire extinguishers
- Emergency lighting.

Portable fire extinguishers are located in the instrument room of each Bin Set. Extinguishers are inspected monthly, to ensure that they are charged, sealed, and accessible.

F-3a(4) Water for Fire Control [IDAPA 58.01.05.008; 40 CFR 264.32(d)]

Two insulated fire water supply tanks with maximum capacities of 800,000 gal each supply the INTEC fire water system. These tanks are maintained between 400,000 and 600,000 gallons of water for fire suppression. Diesel powered pumps move water from wells to maintain these levels. Electric jockey pumps are located on the outlet lines that keep the fire water lines pressurized. Electric pumps are located on the outlets of these tanks to supply water for hose streams and automatic sprinklers at adequate volume and pressure.

F-4. Preventive Procedures, Structures, and Equipment

F-4a. Unloading Operations [IDAPA 58.01.05.012; 40 CFR 270.14(b)(8)(i)]

There are no unloading operations associated with the CSSF.

F-4b. Run-off [IDAPA 58.01.05.012; 40 CFR 270.14(b)(8)(ii)]

The determination of the 100-year riverine floodplain is currently based on a report entitled "Flood Routing Analysis for a Failure of Mackay Dam" (EGG-EP-7184, Koslow and Van Haaften, 1986). This study assumes that 100-year peak flow and failure of Mackay Dam occur simultaneously. Comparing specific building elevations with the floodplain elevations discussed in the 1986 Koslow and Van Haaften report makes floodplain determinations possible for buildings or facilities that contain RCRA-regulated units.

The CSSF are located in the currently accepted 100-year floodplain. The units addressed in this permit are located within fully enclosed vaults. The area surrounding each vault slopes away from the vault, carrying any storm water toward the streets, where the water is collected and diverted away from the vault as demonstrated by Appendix B-1 to Section B of this permit application. Flood protection is provided by the following features:

(1) Engineering Design File (EDF)-3996 in Appendix F-2 includes discussions of building elevations with respect to potential flooding.

(2) Diversion dams have been constructed to divert floodwater away from INL facilities.

(3) Natural features of the INL (soil infiltration capacity, arid climate, etc.) provide significant flood-regulating characteristics.

There is very little threat of contact between storm water and waste that could contaminate other areas, since all wastes are contained inside stainless steel bins within vaults.

F-4c. Water Supplies [IDAPA 58.01.05.012; 40 CFR 270.14(b)(8)(iii)]

Building features such as high-density concrete base and leak detection prevents contamination of water supplies by calcine spills.

F-4d. Equipment and Power Failure [IDAPA 58.01.05.012; 40 CFR 270.14(b)(8)(iv)]

Power failure requirements are applicable, but not of a concern, since there are no power-operated activities at the Bin Sets. Battery-powered emergency lights are located in buildings that support Bin Sets 4, 5, 6, and 7 to provide lighting for personnel during a power failure. Buildings that support Bin Sets 1, 2, and 3 are too small to need emergency lighting. The CAMs in Bin Sets 1, 2, and 3 are not on standby power. After a power failure, radiological control technicians (RCTs) ensure the CAMs are operating and no failures have occurred. The CAMs in bin sets 4, 5, 6, and 7 are on a standby power circuit to allow monitoring during a power outage.

F-4e. Personnel Protection Equipment [IDAPA 58.01.05.012; 40 CFR 270.14(b)(8)(v)]

The buildings are designed with various features that prevent undue exposure of personnel to mixed waste. CAMs and surveys performed by RCTs are used to monitor all areas and aid in the detection of contamination. Operations are conducted according to written procedures. See Section F-3a(3) of this permit application for a list of equipment available for emergency use, and see Section G, the contingency plan of this permit application, for a description of the locations of this equipment.

Pre-job briefings are held, as necessary, to ensure understanding of procedures, safety hazards, and radiological concerns.

F-4f. Releases to the Atmosphere [IDAPA 58.01.05.012; 40 CFR 270.14(b)(8)(vi)]

All of the vaults cooling air inlet dampers and outlet dampers have been physically disable in the closed position to prevent operation or have been blind flanged. These actions have isolated the vaults from the atmosphere. In the event of an airborne release from a bin, the vault will contain any airborne material.

F-5. Prevention of Reaction of Ignitable, Reactive, and Incompatible Wastes

No ignitable or reactive wastes are stored in the CSSF. Waste compatibility was verified prior to treatment in the calciners. No additional compatibility testing was performed for wastes stored in the CSSF.

RCRA PART B PERMIT APPLICATION

FOR THE

IDAHO NATIONAL LABORATORY

Volume 22
Idaho Nuclear Technology and Engineering Center

Calcined Solids Storage Facility

Attachment 7 - Section G
Preparedness, Prevention, and Contingency Plan

February 2006

CONTENTS

EXHIBIT

TABLE

AT KEARNEY FORMAT SECTION REGULATORY REFERENCE/CITATION	COMPLIANCE METHODOLOGY
G-1 General Information 40 CFR 264.51 Purpose and implementation of Contingency Plan. (a) Each owner or operator must have a Contingency Plan for his facility. The Contingency Plan must be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.	**G-1 General Information** The Idaho Nuclear Technology and Engineering Center (INTEC) is designed, constructed, and operated to exclude or isolate hazardous incidents such as fires, explosions and/or unplanned sudden or nonsudden releases of mixed or hazardous waste or hazardous waste constituents to air, soil, or surface water. The INTEC location, operation, site plan and descriptions/information are presented in detail in Section B, Facility Description. This Resource Conservation and Recovery Act (RCRA) contingency plan matrix discusses emergency response at the INTEC. This matrix addresses emergency actions to protect human health, the environment, and INTEC facilities and equipment in an event originating from or affecting the permitted units, comprised of the Calcined Solids Storage Facility (CSSF). The Idaho National Laboratory (INL) Emergency Plan/RCRA Contingency Plan (INL EP/RCRA CP) is the implementing document for emergency response across the INL and is written to comply with requirements that are in addition to those of the Idaho Hazardous Waste Management Act (HWMA)/RCRA. This matrix provides the HWMA/RCRA contingency plan requirements that are being implemented through the INL EP/RCRA CP.
(b) The provisions of the plan must be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment. 40 CFR 264.53 Copies of Contingency Plan A copy of the Contingency Plan and all revisions to the Contingency Plan must be:	The contingency plan outlines the response to emergencies that occur in personnel accessible areas. However, emergencies that involve the inside of the CSSF tanks and vaults will be monitored from outside of the vaults. Due to high radiation levels (between 180 and 380 R/hr fields in CSSF 1 that should be comparable with all the vaults except CSSF 7) the vaults will not be entered until the calcine is removed at closure. The contingency plan is designed to provide the proper preparation and necessary response planning to prevent or minimize hazards to human health and the environment from fires, explosions, or any release of hazardous waste or hazardous waste constituents. The provisions of the contingency plan are carried out immediately whenever a fire, explosion, spill, or release of hazardous waste or hazardous waste constituents that could threaten human health or the environment occurs. Facility personnel trained according to the provisions of this plan manage minor incidents that can be controlled with on-Site resources and do not threaten human health or the environment. Such responses are not considered activation of the contingency plan.
(a) Maintained at the facility; and	The contingency plan, with all subsequent revisions, will be maintained with the RCRA permit at the facility at various locations, including the Plant Shift Supervisor's office.
(b) Submitted to all local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.	Copies of the contingency plan are maintained on-Site, with copies provided to the following through Memoranda of Understanding (MOUs) and Memoranda of Agreement (MOAs) with the DOE Idaho Operations Office (DOE-ID): • Bingham, Bonneville, Butte, Clark, and Jefferson County Sheriffs' Departments • Rexburg City/Madison County, City of Arco, City of American Falls, City of Blackfoot, City of Chubbuck, City of Pocatello, City of Rigby,

40 CFR 264.54 Amendment of the Contingency Plan. The Contingency Plan must be reviewed, and immediately amended, if necessary, whenever: (a) The facility permit is revised; (b) The plan fails in an emergency; (c) The facility changes in its design, construction, operation, maintenance, or other circumstances in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency; (d) The list of emergency coordinators changes; or (e) The list of emergency equipment changes.	and City of Idaho Falls Fire Departments and Jefferson Central and Shelley/Firth Fire Districts • Portneuf and Eastern Idaho Regional Medical Centers • Bingham County Disaster Services, Bonneville County Emergency • Management Services, Butte County Emergency Services, Clark and Jefferson Counties Civil Defense • Shoshone-Bannock Tribes • Bureau of Land Management and National Park Service • State of Idaho and Idaho Transportation Department. The contingency plan is reviewed and immediately amended, if necessary, whenever: • The HWMA/RCRA permit is modified. • The contingency plan fails in an emergency. • It is determined/known that changes in the permitted units' design, construction, operation, maintenance, or other circumstances have taken place in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency. • The list of INTEC emergency action managers (EAMs) changes (refer to Section G-2, Emergency Coordinators). • The list of emergency equipment changes (refer to Section G-5, Emergency Equipment).
G-2 Emergency Coordinators **40 CFR 264.52(d) and 264.55** 40 CFR 264.52(d) The plan must list names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator (see 264.55), and this list must be kept up to date. Where more than one person is listed, one must be named as primary emergency coordinator and the others must be listed in the order in which they will assume responsibility as alternates. For new facilities, this information must be supplied to the Regional Administrator at the time of certification, rather than the time of permit application.	**G-2 Emergency Coordinators** The Emergency Action Managers (EAMs), listed below, are the emergency coordinators (ECs) for purposes of HWMA/RCRA compliance with respect to the contingency plan. Due to the shift-work structure and remoteness of the INTEC, it is not possible or practical for one individual to assume "primary" responsibilities. The responsibility is best assigned through "redundant primary" EAMs, without alternates. Names, home addresses, and home phone numbers of the INTEC EAMs are as follows: • HOME ADDRESSES AND PHONE NUMBERS HAVE BEEN REMOVED FROM ELECTRONIC VERSION The business address (P.O. Box 1625, Idaho Falls, Idaho 83415), work phone [(208) 526-3100], and pager number (2096) are the same for all the INTEC EAMs. The EAM list above is subject to change due to changes in personnel. The current list of EAMs is maintained in Appendix I of the INTEC Addendum to the INL EP/RCRA CP. An INTEC EAM is at the INTEC 24 hours a day, 7 days a week. All of the

40 CFR 264.55 Emergency Coordinator. At all times, there must be at least one employee either on the facility premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response measures. This emergency coordinator must be thoroughly familiar with all aspects of the facility's Contingency Plan, all operations and activities at the facility, the location and characteristics of the waste handled, the location of all records within the facility, and the facility layout. In addition, this person must have the authority to commit the resources needed to carry out the Contingency Plan.	INTEC EAMs are thoroughly familiar with all aspects of the contingency plan, all INTEC operations/activities (including these units), the location and characteristics of waste handled, volumes of waste, the location of all records within the INTEC and layout. All of the INTEC EAMs have the authority to commit the necessary resources to carry out the contingency plan. The INTEC EAMs are responsible for: • Ensuring that the emergency procedures are implemented and completed when responding to any incident involving the units permitted herein to mitigate or eliminate any immediate or potential hazard to personnel, the public, or the environment • Serving as the primary lead in coordinating with the INL Fire Department, INL Emergency Operations Center (EOC), and the INL Warning Communications Center (WCC) for the proper support from these organizations • Delegating authority to the INTEC Emergency Response Organization (ERO), as well as the On-Scene Commander (OSC), as appropriate. If an incident overlaps more than one shift, the active INTEC EAM shall maintain the command until responsibility is officially passed to the incoming INTEC EAM.
G-3 Implementation 40 CFR 264.52(a) and 264.56(d) 40 CFR 264.52(a) The Contingency Plan must describe the actions facility personnel must take to comply with 264.51 and 264.56 in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility. 40 CFR 264.51 *[The text of 40 CFR 264.51 is located in Section G-1, General Information.]* 40 CFR 264.56 Emergency procedures. (a) *[The text of 40 CFR 264.56(a) is located in Section G-4a, Notification.]* (b) *[The text of 40 CFR 264.56(b) is located in Section G-4b, Identification of Hazardous Materials.]* (c) *[The text of 40 CFR 264.56(c) is located in Section G-4c, Assessment.]* (d) If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health, or the environment, outside the facility, he must report his findings as follows: (1) If his assessment indicates that	**G-3 Implementation** The provisions of the contingency plan will be carried out immediately whenever there is a fire, explosion, or unplanned release of hazardous or mixed waste or hazardous waste constituents that threaten human health or the environment (activation of the contingency plan). Such an occurrence (incident) requires classification, as described below, to aid in expediting the appropriate emergency response. Classification of an occurrence is done in accordance with DOE Orders. Through these orders, the DOE has established definitions for occurrence categories and emergency classes. Occurrences are categorized by severity, in order of increasing severity. An operational emergency at the INTEC may require response from the INTEC ERO, or support agencies, because the occurrence involves either an actual or potential fire or explosion involving mixed waste, or an uncontrolled release or threat of an uncontrolled release of mixed waste or constituents. Operational emergencies are defined as an unplanned significant event or condition that requires time-urgent response from outside the immediate/affected area of the incident. An operational emergency shall be declared when events have seriously degraded, or have the potential to degrade, the safety or security of the INTEC. Operational emergencies are classified by severity for specifying the appropriate emergency response actions and notifications, which are commensurate with the degree of hazard for the emergency. Classification aids in the rapid communication of critical information and the initiation of appropriate time-urgent emergency response action. The three classes of operational emergencies, in order of increasing severity, are: **ALERT.** Alert shall be declared when events are predicted, are in

evacuation of local areas may be advisable, he must immediately notify appropriate local authorities. He must be available to help appropriate officials decide whether local areas should be evacuated; and (2) He must immediately notify either the government official designated as the on-scene coordinator for that geographical area, (in the applicable regional contingency plan under part 1510 of this title) or the National Response Center (using their 24-hour toll free number 800/424-8802). The report must include: (i) Name and telephone number of reporter; (ii) Name and address of facility; (iii) Time and type of incident (e.g., release, fire); (iv) Name and quantity of material(s) involved, to the extent known; (v) The extent of injuries, if any; and (vi) The possible hazards to human health, or the environment, outside the facility.	progress, or have occurred that result in either: • An actual or potential substantial degradation in the level of control over hazardous materials (radiological and nonradiological) OR • An actual or potential substantial degradation in the level of safety or security of a facility or process that could, with further degradation, produce a site area emergency or a general emergency. If an actual or potential substantial degradation in the level of control over hazardous materials (radiological and nonradiological) occurs, the radiation dose from any release to the environment of radioactive material or a concentration in air of other hazardous material is expected to exceed either: • The applicable Protective Action Guide (PAG) or Emergency Response Planning Guideline (ERPG) at or beyond 30 m from the point of release to the environment OR • Ten percent of the applicable PAG or 10% of the ERPG-2 (TEEL-2) value at 100 m AND It is not expected that the applicable PAG or ERPG will be exceeded at or beyond the facility boundary or exclusion zone boundary. **SITE AREA EMERGENCY.** A site area emergency shall be declared when events are predicted, are in progress, or have occurred that result in either: • An actual or potential major failure of functions necessary for the protection of worker or the public OR • An actual or potential major degradation in the level of safety or security of a facility or process that could, with further degradation, produce a general emergency AND The radiation dose from any release of radioactive material or concentration in air from any release of other hazardous material is not expected to exceed the applicable PAG or ERPG at or beyond the site boundary. **GENERAL EMERGENCY** A general site emergency shall be declared when events are predicted, are in progress or have occurred that result in either: • Catastrophic reduction of facility safety or security systems with a potential for the release of large quantities of hazardous materials (radiological or nonradiological) to the environment actually occurring or imminent OR The radiation dose from any release of radioactive material or a concentration in air from any release of other hazardous material is expected to exceed the applicable PAG or ERPG at or beyond the site

	boundary. The following is a list of personnel and organizations with a general description of their actions/responsibilities in response to fires, explosions, or unplanned sudden or nonsudden releases of hazardous waste or hazardous waste constituents to air, soil, or surface water: • Operations Personnel – Ensure personal safety, inform plant shift supervisor of situation/emergency (type of emergency, location, size, material(s) involved, status of other waste materials, equipment, etc.), and, if possible and properly trained, stop waste movements, secure area, and initiate efforts to stabilize the situation • Plant Shift Supervisor/EAM – Sound appropriate alarms, gather information/documents, responsible for conducting emergency response within the INTEC and the immediate implementation of the contingency plan • INL Fire Department – Primary responders to all fires and hazardous incidents, providing fire fighting, hazardous materials (HAZMAT) response, and emergency medical services • INTEC Emergency Response Organization – Trained facility personnel including the INTEC EAM • On-Scene Commander (OSC) – With the assistance of the INTEC EAM, assesses situation from the standpoint of tactical deployment of the INL Fire Department and overall effort to address the situation/emergency • INL Emergency Operations Center (EOC) – Provides support to the INTEC ERO, including dose assessment, off-Site notifications, public information, and other technical/tactical functions that aid in the assessment, control, and return to operations • Emergency Director (ED) – Manages the INL EOC and has jurisdiction over all INL operational emergency response activities • INL Warning Communications Center (WCC) – Serves as the central organization for coordinating efforts between INL EROs and off-Site agencies/support services • Industrial Hygienist – Assists in the assessment of hazards/risk (such as monitor areas with known/suspected high concentrations of hazardous vapors/gases) and appropriate response actions • Waste Technical Specialist – Assists in the identification of waste/materials, proper adsorbent/absorbent, and post-emergency collection, storage, treatment and/or disposal • Central Facilities Area (CFA) EAM – Assists INTEC EAM where required/requested to assess possible effects beyond the perimeter of the INTEC, in which case he would assume a responsibility role. Specific actions which further address 40 CFR 264.52(a) and 264.56(d) are described in Section G-4, Emergency Response Procedures.

G-4 Emergency Response Procedures	**G-4 Emergency Response Procedures**
G-4a Notification 40 CFR 264.56(a) 40 CFR 264.56(a) Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his designee when the emergency coordinator is on call) must immediately: (1) Activate internal facility alarms or communications systems, where applicable, to notify all facility personnel; and	**G-4a Notification** In the event of a fire or explosion, fire detection equipment (smoke detectors, heat detectors, water flow alarms, or water sprinkler alarms) will automatically notify the Fire Alarm Center (FAC), which will involve the INL Fire Department and personnel located within the building where the alarm was activated. In any event (fire, explosion or release), the person involved/discovering can activate the nearest manual alarms and use communication devices (such as telephones, hand-held two way radios) to summon assistance, and make notifications to the plant shift supervisor/EAM and/or the INL Fire Department. The INTEC EAM will ensure that all facility personnel are being, or have been, notified of the imminent or actual emergency situation, including a confirmation call to the WCC, to verify the INL Fire Department is responding. All notifications shall include the following information, as appropriate: • Name and telephone number of the caller • Location of the incident and the caller • Time and type of incident • Severity of the incident • Description of the incident • Cause of the incident, if known • Assistance needed to deal with or control the incident • Name and address of the facility • Name and quantity of material(s) involved, to the extent known • Extent of injuries, if any • Possible hazards to human health, or the environment, outside the facility. Once the EAM is notified of a fire, explosion, or uncontrolled release at the INTEC (by either an eyewitness or an alarm), the EAM will activate the contingency plan. If necessary, the EAM will also request assistance from the INL Fire Department. The INL Fire Department is contacted by dialing 777. In case of fire, the INL Fire Department will respond to the alarms. The nature of any incident potentially involving hazardous waste or hazardous materials will undergo assessment, as described in Section G-4c. The contingency plan will not be activated if the incident is considered minor and does not constitute an emergency requiring notification of regulatory agencies (such as a fire, explosion, or natural occurrence that does not involve or threaten hazardous or mixed wastes; a release that does not constitute a potential threat to human health or the environment; a spill contained in secondary containment; and/or a spill or release that is less than a reportable quantity specified in 40 CFR 302.4). Reportable quantities under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the Emergency Planning and Community Right-to-Know Act (EPCRA) apply to the release of any substance listed in Table 302.4 of 40 CFR Part 302. The INTEC maintains its own emergency response capabilities through the ERO. There are adequate supplies, equipment, and trained personnel available at the INTEC to mitigate expected emergencies. The INL Fire Department and security personnel operate separately, but their activities are coordinated through the EAM. DOE-ID maintains coordination and mutual aid agreements with local outside agencies who make additional emergency personnel and equipment available if outside assistance is required. In addition, as a DOE facility, the staff at the INTEC can call upon the resources of the INL EOC for additional assistance, including, but not

	limited to, MOU agreements with local agencies (such as outside medical facilities or state and local law enforcement agencies) and other federal agencies. (See Section G-1.) **Communication of Emergency Conditions to Facility Employees** The procedures for notifying facility personnel depend on the type and severity of emergency and may include the following: • Local Fire Alarms – In the event of a fire, these may be activated automatically or manually. • Evacuation – The evacuation signal is an alternating, siren tone, manually activated by the contract security force, or the INTEC Emergency Control Center, at the direction of the EAM. If the primary warning system consisting of alarms and signals fails to operate when activated (as in a total power outage and failure of the backup power systems), security will be directed by the EAM to use voice amplifiers to alert personnel to evacuate the area. • INTEC Voice Paging System – The INTEC voice paging system provides personnel with general and emergency information.
(2) Notify appropriate State or local agencies with designated response roles if their help is needed.	**Notification of Local, State, and Federal Authorities** If it is determined that the permitted units have had a fire, explosion, spill, or release of hazardous waste or hazardous waste constituents, or an emergency resulting in a release of a hazardous substance included in 40 CFR 302.4, that could threaten human health or the environment inside or outside the INTEC, the contingency plan will be activated. The EAM will ensure that local authorities are notified by telephone and/or facsimile. Based on the initial information provided by the EAM or the ED these notifications are made by the INL WCC. The agencies to be contacted include, as appropriate: <u>County Dispatch Centers</u>: <u>Butte County</u> (208) 527-3585 Fax Number (208) 527-3916 <u>Bonneville County</u> (208) 522-1644 or (208) 529-1200 Fax Number (208) 529-1153 <u>Bingham County</u> (208) 785-7653 Fax Number (208) 785-8067 <u>Clark County</u> (208) 374-5669 Fax Number (208) 374-5614 <u>Fort Hall</u> Police Dispatch (208) 233-7451 Public Safety (208) 237-0137 Fax Number (208) 478-4005 <u>Jefferson County</u> (208) 745-9207 Fax Number (208) 745-9212

	DOE-HQ Emergency Operations Center (202) 586-8100 Fax Number (202) 586-8485 State of Idaho Communications Center (800) 632-8000 or (208)855-9670 Fax Number (208) 846-7620 National Response Center 1-800-424-8802 The first notification of regulatory agencies will include, as appropriate: • Name and address of the facility and the name and phone number of the reporter • Type of incident: fire, explosion, release, etc. • Date and time of the incident • Type and quantity of hazardous material(s) involved • Exact location of the incident • Injuries, if any • Possible hazards to human health and the environment (air, soil, water, wildlife, etc.) outside the facility • Name, address, and telephone number of the party in charge of or responsible for the facility or activity associated with the incident • Steps being taken or proposed to contain and clean up the material involved in the incident. The ED and EAM will also be available to help the appropriate local, state, or federal officials decide whether local areas should be evacuated. **Notification of the General Public** The INL Emergency Director or the EAM will notify the general public through the public safety and emergency agencies listed above. DOE policy is to provide accurate and timely information to the public, by the most expeditious means possible, concerning emergency situations that may affect employees, off-Site personnel, public health and safety, and/or the environment.
G-4b Identification of Hazardous Materials 40 CFR 264.56(b) 40 CFR 264.56(b) Whenever there is a release, fire, or explosion, the emergency coordinator must immediately identify the character, exact source, amount, and areal extent of any released materials. He may do this by observation or review of facility records or manifests, and, if necessary, by chemical analysis.	**G-4b Identification of Hazardous Materials** The identification of hazardous wastes or hazardous waste constituents involved in a fire, explosion, or release to the environment is a necessary part of the assessment of an incident. RCRA-regulated hazardous waste and hazardous substances and materials listed in 40 CFR 302.4 involved in any release at the permitted units will be identified. In normal storage configuration, the CSSF provides for protection of human health and the environment by isolating the calcined waste from the environment and INTEC personnel. The INTEC EAM will determine the identity, exact source, amount, and extent of any released materials. Sources of information include, but may not be limited to: • Observations of personnel involved in or discovering the situation • Permitted units operating records • Material safety data sheets (MSDSs) • Monitoring performed by an industrial hygienist

	• The INL Fire Department's findings/reports. Released or residual materials (residuals from a fire or explosion) that cannot be identified by labels, records, logbooks, identification numbers, or electronic databases will be sampled in accordance with a waste analysis plan (WAP), and analyzed to determine the chemical properties of the waste. The analytical results will determine the proper disposition of unidentifiable waste materials.
G-4c Assessment 40 CFR 264.56(c) and 264.56(d) 40 CFR 264.56(c) Concurrently, the emergency coordinator must assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment must consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-off from water or chemical agents used to control fire and heat-induced explosions). 40 CFR 264.56(d) *[The text of 40 CFR 264.56(d) is located in Section G-3, Implementation.]*	**G-4c Assessment** Once the required notifications have been made, the EAM will ensure the identity, exact source, amount, and extent of released materials spreading from the event location can be determined. Individuals entering the affected area to gather information for the assessment will wear appropriate personal protective equipment (PPE). Robotic equipment and/or portable shielding may be used to determine and reduce the radiological hazards from released waste to protect INTEC personnel. The EAM will determine the identity of materials released, based on knowledge of the area and access to the waste identification/characterization information described in Section G-4b. After the materials involved in an emergency are identified, the specific information on the associated hazards, appropriate PPE, decontamination method, etc., will be obtained from MSDSs or other appropriate chemical reference materials. Based on default conservative estimates of potential source terms, emergency action levels (EALs) have been developed for fires, explosions, radiological releases, and other emergency events. EALs are specific, predetermined, observable criteria used to determine the emergency classification and initial protective actions for operational emergencies. These EALs provide guidance for activating the INL EROs at the appropriate level in response to the incident. These EALs specify the initial protective actions (that is, evacuation or take cover) to be taken in response to the event. The emergency assessment requires determination of hazards involving evaluation of several criteria, including the following: • Nature of the accident – Known or probable cause; current/projected status of the affected area; facility conditions; status of containment boundaries/systems; type(s) and quantities of hazardous waste/material (nonradiological and radiological) involved in the incident • Weather conditions, present and expected – Wind speed and direction; precipitation; time of day; stability class; weather forecast; anticipated dispersion pattern; direction of travel and width of plume; locations affected • Exposure – Magnitude of actual or potential exposure to employees, the

	general public, and the environment; duration of human and environmental exposure; pathways of exposure • Toxicity – Types of adverse health or environmental effects associated with exposures; the relationship between the magnitude of exposure and adverse effects • Reactivity (if applicable) – Hazardous materials or wastes involved in an incident will be assessed through accessing the MSDSs for the affected material to determine its reactivity and the recommended method(s) for managing such waste • Effects – Direct and indirect effects of the release, fire, or explosion (such as the effects of any toxic, irritating or asphyxiating gases that are generated, or the effects of any hazardous surface water run-off from water or chemical agents used to control fire or explosions) • Uncertainties – Considerations for undeterminable or future exposures; uncertain or unknown health effects including future health effects. If the assessment indicates no real or potential threat to human health or the environment, the occurrence will be considered a minor incident. Minor incidents do not require further activation of the contingency plan. If the assessment indicates that a potential threat exists to off-Site human health or the environment due to airborne contaminants, the EAM or ED will advise the appropriate off-Site response personnel of the nature of the potential threat. Wind data for the INTEC and the nature of the wastes normally stored at the permitted units do not indicate that an airborne release is likely to occur outside the CSSF.
G-4d Control Procedures **40 CFR 264.52(a)** 40 CFR 264.52(a) The Contingency Plan must describe the actions facility personnel must take to comply with 264.51 and 264.56 in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility.	**G-4d Control Procedures** • Personnel at INTEC do not enter the CSSF vaults because of the radiological hazards. If a release within the vaults is detected by the CAMs, additional radiological characterization will be conducted. This characterization will be completed using radiological instrumentation that can be lowered into the vaults though instrumentation ports. This will allow for radiological characterization of the released waste while still providing adequate protection of human health and the environment. In addition, this monitoring can be completed at multiple points in time to assess whether waste continues to be released within the vaults or if the radiological conditions within the vault have stabilized. In any case, personnel will not enter the vaults to complete cleanup of released materials. The released materials will be removed from the vault as part of the calcine retrieval operations in preparation for treatment or final disposal. **Natural Phenomena Emergencies** After any natural emergency (earthquake, flood, lightning strike, etc.) that may have affected the permitted units, the EAM shall ensure the following actions are performed as appropriate: • Check to ensure all automatic and manual alarms in the permitted units are working if feasible • Conduct a general survey of the exterior of the permitted units looking for potential problems (including radiological characterization) • Take any necessary corrective measures, however temporary, to rectify

	potential or real problems • Record all inspection results. **Power Failure** Should power fail, battery-operated lights will automatically illuminate. In the event of a power failure, personnel will secure any work in progress and leave the area until power is restored. The utilities have backup power replacements as shown: • Lights – Fixed battery-operated lights will operate • Alarms – Emergency communication and fire alarm systems have battery backup • Communication Devices – Telephone and/or radio networks will be used
G-4e Prevention of Recurrence or Spread of Fires, Explosions, or Releases 40 CFR 264.56(e) and (f) 40 CFR 264.56(e) During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include where applicable, stopping processes and operations, collecting and containing release waste, and removing or isolating containers. 40 CFR 264.56(f) If the facility stops operations in response to a fire, explosion, or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.	G-4e Prevention of Recurrence or Spread of Fires, Explosions, or Releases **Equipment Failure** There will be no impact to the permitted units from an equipment failure. Maintenance personnel will repair mechanical failures that do not result in spills. During an emergency, the EAM will ensure that reasonable measures are taken so that fires, explosions, and releases do not occur, recur, or spread to mixed waste or other hazardous materials at the facility. These measures may include the following as appropriate: • Stopping processes and operations • Collecting and containing released wastes and materials • Removing or isolating containers of waste or hazardous materials • Ensuring wastes managed during an emergency are handled, stored, or treated with due consideration for compatibility with other wastes and materials onsite and with any containers utilized (see Section G-4g) • Restricting personnel not needed for response activities from the area of the incident • Evacuating the area if necessary • Curtailing nonessential activities in the area • Conducting preliminary inspections of adjacent facilities and equipment to assess damage • Over-packing and/or removing damaged containers/drums from affected areas • Repairing damaged equipment and facilities, as appropriate • Constructing, monitoring, and reinforcing temporary dikes, as needed. As described in Section G-4a above, once the EAM is notified (by either an eyewitness or alarm) of a fire, explosion, or release, the EAM will immediately report the situation to the WCC and take action to notify the INL Fire Department and ERO, as necessary. If necessary, the EAM may request other INL support. All personnel not involved in combating the emergency shall evacuate the affected area and assemble in designated locations away from the affected area as informed by the EAM by appropriate means. Emergencies originating at the permitted units will be addressed by activation of the contingency plan under the direction of the EAM. The contingency plan may be activated at any time, at the discretion of the EAM.

Fires
The design of the bin sets eliminated combustible loading within the vaults therefore, fires within the vaults themselves will not occur. Fires that occur outside the vaults will be addressed as follows. Fires that involve or threaten hazardous or mixed wastes are considered emergencies for the purposes of the contingency plan. Planned actions include:

- The INL Fire Department will be contacted by pulling the fire-alarm call box or by dialing 777
- Fire fighting personnel will don appropriate PPE
- If the fire is small and the fuel source is small, portable fire extinguishers may be used to put out the fire
- Whenever possible, flammable material will be removed from the area of the fire
- If the fire spreads or increases in intensity, all personnel will be evacuated to an upwind location
- The EAM will remain in contact with responding personnel to advise them of the known hazards
- As necessary, actions will be taken to ensure storm drains do not receive potentially hazardous run-off. Dikes will be built around storm drains and any valves controlling discharge will be closed.

The EAM is responsible for all emergency response actions conducted within the facility, supporting and coordinating with the On-Scene Commander and for the overall mitigation of the event until the emergency event is terminated. Selection of methods and tactics of fire fighting is the responsibility of the INL Fire Department.

An absorbent will be poured over all chemical residues resulting from a hazardous waste fire. Once the liquid is absorbed, the waste will be swept or shoveled back into containers, and the surface will be cleaned using cleaners appropriate to the identified chemicals.

Fire fighting waters will be collected and analyzed, whenever possible, to determine an appropriate disposal method.

Explosions
The design of the bin sets eliminated the potential for explosions; therefore explosions within the vaults themselves will not occur. Explosions that occur outside the vaults will be addressed as follows. Explosions that involve or threaten hazardous or mixed waste or an explosion that is imminent are considered emergencies for the purposes of the contingency plan. Planned actions include:

- The area will be immediately evacuated.
- Any injured personnel will be immediately transported to the appropriate medical facility for treatment.
- The EAM will immediately notify the appropriate emergency response personnel and the WCC about the explosion.
- The EAM will remain in contact with responding personnel to advise them of the known hazards involved and the degree and location of the explosion and associated fires.
- The EAM is responsible for all emergency response actions conducted within the facility, supporting and coordinating with the On-Scene Commander and for the overall mitigation of the event until the emergency event is terminated. Selections of methods and tactics of responding to an explosion are the responsibility of the On-Scene

	Commander. • An adsorbent/absorbent will be poured over all chemical residues resulting from a hazardous waste explosion. Once the liquid is absorbed, the waste will be swept or shoveled back into the drums, and the surface cleaned using cleaners appropriate to the identified chemicals. • The EAM will ensure all operational units are secured (e.g., process equipment, and ventilation equipment) that may be affected directly or indirectly by the explosion, once the areas have been determined safe for reentry. **Releases** Released materials within the vaults are addressed in Section G-4d. Any other releases that occur outside the vaults will be addressed as follows. The EAM will implement the following, as appropriate, in the event that: (a) a hazardous or mixed waste or hazardous material spill causes an immediate health hazard; (b) a hazardous or mixed waste or hazardous material spill cannot be contained with secondary containment or application of absorbents; or (c) a threat exists for spilled material to move out of the permitted units: • Evacuate the immediate area • Review facility records to determine the identity and chemical nature of released material • Don appropriate PPE to prevent exposure to the material • Secure the source of the release, if possible • Build a dike to contain run-off • Ensure storm drains do not receive potentially hazardous run-off or spill material • Build dikes around storm drains or close any valves controlling discharge • Collect and contain released wastes by stabilizing or neutralizing the spilled material, as appropriate, pouring an absorbent over the spilled material, and sweeping or shoveling the absorbed material into drums or other appropriate containers • Ensure that waste that may be incompatible with the released material will be managed in the affected area until cleanup procedures are complete. After collection of a released material, the incident location will be sampled and evaluated. If contamination is found to exist, contaminated materials may be collected, drummed (if appropriate), and removed from the area for disposal at a permitted disposal facility. Depending on the specific conditions, however, INTEC personnel may choose to implement an alternative decontamination method, such as surface cleaning or in situ neutralization or stabilization. Any such alternative will be discussed with the Director of the Idaho Department of Environmental Quality, before implementation.
G-4f Storage and Treatment of Released Materials 40 CFR 264.56(g) 40 CFR 264.56(g) Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that	**G-4f Storage and Treatment of Released Materials** Once initial spill containment has been completed, the EAM will ensure that recovered hazardous materials and waste are properly stored, treated, and/or disposed of, as required by IDAPA 58.01.05.006; 58.01.05.007; and 58.01.05.008 (40 CFR 262, 263, and 264). For spills of liquid that escaped secondary containment, the perimeter of the

results from a release, fire, or explosion at the facility.	spill will be diked with an absorbent material, such as absorbent pillows, that is compatible with the material(s) released. Freestanding liquid will be transferred to a labeled compatible container. The remaining liquid will be absorbed with an absorbent material and swept or scooped into a labeled compatible container. Spill residue will be removed. Spills of dry material will be swept or shoveled into a labeled compatible recovery container. Material recovered from the spill will be transferred to a new or clean-washed container. All containers will meet Department of Transportation (DOT) specifications for shipping the recovered wastes and materials. Hazardous waste resulting from the cleanup of a fire, explosion, or release will be contained and managed as a hazardous waste until such time that it can be determined that the waste is not hazardous, as defined in IDAPA 58.01.05.005 (40 CFR 261, Subparts C and D). In most cases, the hazardous waste inventory logs completed when containers are placed in storage at the permitted units will allow a determination of the hazardous wastes and hazardous waste constituents present in any cleanup of a release or the residues from an emergency condition. When necessary, however, samples of the waste will be collected and analyzed to determine the presence of any hazardous characteristics and/or hazardous waste constituents; this information is needed to evaluate disposal options. Approved sampling and analytical methods will be used. If the entire permitted unit has been impacted because of a fire, explosion, or spill, pending decontamination, no hazardous or mixed waste will be accepted for storage or treatment, until it is restored to design status. All cleanup and decontamination residues will be packaged, handled, and stored according to applicable state or federal regulations, DOE orders, and permitted unit procedures. During this period, storage will occur at a less-than-90-day storage site. All liquid wastes will be provided with secondary containment. If unaffected areas of the permitted unit can be used, containers of waste from the affected area(s) will be cleaned, over-packed, placed in spill pans, or transferred to new containers and moved to the unaffected areas. The contaminated area will be decontaminated. If the release results in contamination to a permeable surface, such as soil, asphalt, or other surface, the material will be removed and placed in DOT-approved shipping containers. Contaminated surface materials, as well as materials used in the cleanup (such as rags and absorbent material), will be containerized and placed into storage, pending transfer to an on- or off-Site treatment or disposal facility, in accordance with applicable regulations.
G-4g Incompatible Waste **40 CFR 264.56(h)(1)** 40 CFR 264.56(h) The emergency coordinator must ensure that, in the affected area(s) of the facility: (1) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and	**G-4g Incompatible Waste** In the event of a hazardous material or hazardous waste release, the EAM will ensure that no wastes will be received, treated, or stored in the affected areas until cleanup operations have been completed. This will ensure that incompatible waste will not be present in the vicinity of the release. If waste is generated as the result of a spill or release of hazardous materials or hazardous waste, the waste generated as a result of abatement and cleanup will be evaluated to determine its compatibility with other wastes being managed in temporary storage areas. The evaluation will identify the material or waste that was spilled or released and determine its characteristics (ignitable, reactive, corrosive, and toxic). The waste generated by the abatement and cleanup activities will be stored in that part of the temporary storage area of the permitted units that has been established to manage wastes with which it is compatible. Administrative controls, such

	as installing barriers and/or a cordon around the temporary storage area(s), will be implemented to ensure segregation of wastes. The EAM will not allow hazardous or mixed waste operations to resume in a building or area in which incompatible materials have been released before ensuring that necessary postemergency cleanup operations to remove potentially incompatible materials have been completed.
G-4h Post-Emergency Equipment Maintenance 40 CFR 264.56(h)(2) 40 CFR 264.56(h) The emergency coordinator must ensure that, in the affected area(s) of the facility: (2) All emergency equipment listed in the CP is cleaned and fit for its intended use before operations are resumed.	**G-4h Postemergency Equipment Maintenance** The EAM will ensure that emergency equipment is cleaned and ready for its intended use before operations are resumed. Any equipment that cannot be decontaminated may be discarded as waste (that is, hazardous, mixed, solid, as appropriate). Equipment or supplies that cannot be reused following an emergency will be replaced. After the equipment has been cleaned, repaired, or replaced, a postemergency facility and equipment inspection will be performed, and the results will be recorded. Cleaning and decontaminating equipment may be accomplished using nonhazardous materials whenever possible, by physically removing gross or solid residue, rinsing with water or another nonhazardous liquid, and/or washing with detergent and water. Decontamination and cleaning will be conducted in a confined area, such as a wash pad or building equipped with a floor drain and sump isolated from the environment. Care will be taken to prevent wind dispersion of particles and spray. Liquid or particulate resulting from cleaning and decontamination of equipment will be placed in clean, compatible containers. Waste resulting from decontamination operations will be analyzed for hazardous waste constituents and/or hazardous waste characteristics to determine proper management. When INTEC facility personnel have completed any post-emergency cleanup of waste and hazardous residues and waste management operations are ready to resume, the EAM will ensure the following have occurred: • All emergency equipment used in managing the emergency has been cleaned or replaced and is fit for service • Notification of EPA Region 10 Administrator • Notification of the Director of the Department of Environmental Quality and any relevant local authorities. This postemergency notification complies with IDAPA 58.01.05.008; [40 CFR 264.56(i)].
G-4j Tank Spills and Leakage 40 CFR 264.194 (c) 40 CFR 264.194(c) The owner or operator must comply with 264.196 if a leak or a spill occurs in the tank system. 40 CFR 264.196 Response to leaks or spills and disposition of leaking or unfit-for-use tank systems. A tank system or secondary containment system from which there has been a leak or spill, or which is unfit for use, must be removed from service immediately, and the owner or operator must satisfy the following requirements: (a) Cessation of use; prevent flow or	**G-4j Tank Spills and Leakage** In addressing this section, it is important to realize that the INTEC buildings are designed, constructed and remotely operated to exclude or isolate hazardous incidents. In the case of the permitted tank systems (tanks and ancillary equipment), all are contained within a completely enclosed, self-supporting structure that is designed and constructed of manmade materials of sufficient strength and thickness to support themselves, the waste contents, and personnel and heavy equipment that may operate within the building(s).

addition of wastes. The owner or operator must immediately stop the flow of hazardous waste into the tank system or secondary containment system and inspect the system to determine the cause of the release.	When a spill or leak from a tank system is encountered, the plant shift supervisor/EAM will assess the situation, and determine the proper and safe action(s), if any, necessary to best stop the spill or leak (e.g., stop the flow of waste into or out of the tank). Additional waste will not be added to the tank.
(b) Removal of waste from tank system or secondary containment system. (1) If the release was from the tank system, the owner/operator must, within 24 hours after detection of the leak or, if the owner/operator demonstrates that it is not possible, at the earliest practicable time, remove as much of the waste as is necessary to prevent further release of hazardous waste to the environment and to allow inspection and repair of the tank system to be performed. (2) If the material released was to a secondary containment system, all released materials must be removed within 24 hours or in as timely a manner as is possible to prevent harm to human health and the environment.	All of the subject tanks are mixed waste tanks and radiological considerations will in most cases impede efforts to remove the waste from the tank. However, the waste will be addressed in as timely a manner as possible to prevent harm to human health and the environment while ensuring the safety of the facility personnel responding to the spill/leak. After ensuring personnel safety, the most important task is to identify the source of the spill/leak and the actual and potential extent of the leak/spill, for example: • A minor leak from ancillary equipment (a pump or valve, that can be easily stopped/controlled) • A minor tank leak/spill that can be easily stopped • A minor leak or spill to a containment system or portion of the INTEC that can be easily stopped • A major tank leak from which total loss of contents could be realized. Upon notification of the emergency, the INL Fire Department is responsible for response and mitigation. Once the source of the leak/spill is identified and controlled, trained INTEC facility personnel will assess the extent of the spill/leak and will initiate corrective actions and cleanup activities. In the most extreme case of tank failure, the INTEC EAM will be notified and the contingency plan will be activated.
(c) Containment of visible releases to the environment. The owner/operator must immediately conduct a visual inspection of the release and, based upon that inspection: (1) Prevent further migration of the leak or spill to soils or surface water; and (2) Remove, and properly dispose of, any visible contamination of the soil or surface water.	Since all tanks and ancillary equipment for the CSSF are contained within permanent structures, release to soils or surface water is extremely unlikely. Migration of the leak or spill toward soils or surface water will be prevented as practicable, and any contaminated materials will be removed, characterized, and properly disposed of.
(d) Notifications, reports. (1) Any release to the environment, except as provided in paragraph (d)(2) of this section, must be reported to the Regional Administrator within 24 hours of its detection. If the release has been reported pursuant to 40 CFR Part 302, that report will satisfy this requirement. (2) A leak or spill of hazardous waste is exempted from the requirements of this paragraph if it is: (i) Less than or equal to a quantity of one (1) pound, and (ii) Immediately	Any release from the tank system to the soil, groundwater, or surface water will be reported to the Regional Administrator within 24 hours of detection, unless: • The release has already been reported pursuant to 40 CFR Part 302 • It is a spill of hazardous waste totaling less than or equal to one pound that was immediately contained and cleaned up. Within 30 days of detection of a release from the tank system to the soil, groundwater, or surface water, a report detailing the release will be submitted to the Regional Administrator. This report will, at a minimum,

contained and cleaned up. (3) Within 30 days of detection of a release to the environment, a report containing the following information must be submitted to the Reg. Admin. (i) Likely route of migration; (ii) Characteristics of the surrounding soil (composition, geology, hydrogeology, climate); (iii) Results of any monitoring or sampling conducted in connection with the release (if available). If sampling or monitoring data relating to the release are not available within 30 days, these data must be submitted to the Reg. Admin. as soon as they become available. (iv) Proximity to down-gradient drinking water, surface water, and populated areas; and (v) Description of response actions taken or planned.	contain the following: • The likely route of migration • Characteristics of the surrounding soil • The results of any monitoring or sampling conducted in connection with the release, if available • Proximity to down-gradient drinking water, surface water, and populated areas • A description of response actions taken or planned. In all cases the proper reports will be filed in accordance with Section G-8, the incident will be documented in the unit's operating record, and the PPE/equipment used in the response will be decontaminated or disposed and replaced.
(e) Provision of secondary containment, repair, or closure. (1) Unless the owner/operator satisfies the requirements of paragraphs (e)(2) through (4) of this section, the tank system must be closed in accordance with Sec. 264.197. (2) If the cause of the release was a spill that has not damaged the integrity of the system, the owner/operator may return the system to service as soon as the released waste is removed and repairs, if necessary, are made. (3) If the cause of the release was a leak from the primary tank system into the secondary containment system, the system must be repaired prior to returning the tank system to service. (4) If the source of the release was a leak to the environment from a component of a tank system without secondary containment, the owner/operator must provide the component of the system from which the leak occurred with secondary containment that satisfies the requirements of Sec. 264.193 before it can be returned to service, unless the source of the leak is an aboveground portion of a tank system that can be inspected visually. If the source is an aboveground component that can be inspected visually, the component must be repaired and may be returned to service without secondary containment as long as the requirements of	A variance from secondary containment for the tank systems identified in this permit has been requested. However, once a release has been contained and cleaned up, the affected unit(s) will be inspected and returned to service, provided that: • The cause of the release has been identified • The integrity of the tank and/or ancillary equipment has not been compromised • The source of the release has been repaired, as necessary • The affected area has been decontaminated • Spill response equipment has been replenished or decontaminated and returned to service.

paragraph (f) of this section are satisfied. If a component is replaced to comply with the requirements of this subparagraph, that component must satisfy the requirements for new tank systems or components in Sections 264.192 and 264.193. Additionally, if a leak has occurred in any portion of a tank system component that is not readily accessible for visual inspection (e.g., the bottom of an inground or onground tank), the entire component must be provided with secondary containment in accordance with Sec. 264.193 prior to being returned to use.	
(f) Certification of major repairs. If the owner/operator has repaired a tank system in accordance with paragraph (e) of this section, and the repair has been extensive (e.g., installation of an internal liner; repair of a ruptured primary containment or secondary containment vessel), the tank system must not be returned to service unless the owner/operator has obtained a certification by an independent, qualified, registered, professional engineer in accordance with Sec. 270.11(d) that the repaired system is capable of handling hazardous wastes without release for the intended life of the system. This certification must be submitted to the Regional Administrator within seven days after returning the tank system to use.	When a tank system repair has been extensive (such as repair of a ruptured primary containment), the tank system will not be returned to service until a certification by an independent, qualified, registered, professional engineer in accordance with 40 CFR 270.11(d) has been obtained. The certification will reflect that the repaired system is capable of handling hazardous wastes without release for the intended life of the system. This certification will be submitted to the DEQ within seven days after returning the tank system to use.
G-5 Emergency Equipment 40 CFR 264.52(e) 40 CFR 264.52(e) The plan must include a list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan must include the location and a physical description of each item on the list, and a brief outline of its capabilities.	**G-5 Emergency Equipment** A variety of equipment is available at the INTEC for emergency response, containment, and cleanup operations. This includes equipment for spill control, fire control, personnel protection, monitoring and medical attention, communications, and alarms. This equipment is immediately available to emergency response personnel. A listing of available emergency equipment is shown in Table G-1. In the event a spill cannot be mitigated with the supplies kept at the permitted units, additional response supplies are available throughout the INTEC, and throughout the INL. Examples of safety and emergency equipment located at the CSSF include: • Portable fire extinguisher • Plant voice paging and evacuation alarm system • Internal voice paging system • Communication devices • Emergency lights and exit sign.

	Safety and emergency equipment provide adequate capabilities for trained personnel to respond to and control leaks, spills, and emergency situations until assistance arrives. The INL Fire Department has other emergency equipment including, but not limited to, self-contained breathing apparatus (SCBAs), stretchers, and first-aid kits.
G-6 Coordination Agreements 40 CFR 264.52(c) and 264.37 40 CFR 264.52(c) The plan must describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services pursuant to 264.37. 40 CFR 264.37Arrangements with local authorities. (a) The owner or operator must attempt to make the following arrangements, as appropriate for the type of waste handled at his facility and the potential need for the services of these organizations: (1) Arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility, and possible evacuation routes. (2) Where more than one police and fire department might respond to an emergency, agreements designating primary emergency authority to a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority; (3) Agreements with State emergency response teams, emergency response contractors, and equipment suppliers; and (4) Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility. (b) Where State or local authorities decline to enter into such arrangements, the owner	**G-6 Coordination Agreements** The INTEC EAM will ensure initial responders are dispatched to an emergency event originating at the INTEC. However, the level of response depends on the nature and extent of the incident. If warranted, additional INL resources are obtained, such as on-Site security, medical, and fire assistance, which are available on a 24-hour basis. Section G-1, General Information [40 CFR 264.53 (b)], contains the list of off-Site state, local and tribal agencies that are familiar with the contingency plan and may be called upon through agreements with the DOE-ID.

or operator must document the refusal in the operating record.	
G-7 Evacuation Plan 40 CFR 264.52(f) 40 CFR 264.52(f) The plan must include an evacuation plan for facility personnel where there is a possibility that an evacuation could be necessary. This plan must describe signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes (in cases where the primary routes could be blocked by releases of hazardous waste or fires).	**G-7 Evacuation Plan** The normal actions to protect nonemergency personnel are to minimize their exposure to radiation, airborne radioactivity, hazardous chemicals, and airborne hazardous chemicals, by seeking shelter, avoiding the accident area, or evacuating selected buildings or areas. In the event of an emergency that results in high radiation, hazardous chemical levels, or a continuing release to the environment, it may become necessary to evacuate the entire INTEC area. Building and Emergency Plan Maps depicting evacuation routes are located throughout the INTEC buildings. Upon exiting a building, personnel proceed to a designated staging area not affected by the emergency. The INTEC evacuation system alerts personnel of the need to evacuate the area. This system is on backup power; should power fail, it will automatically switch to a battery. Evacuation sirens are strategically located throughout the INTEC to provide coverage for all occupied areas. If the evacuation alarm is out of service or fails to operate, the evacuation will be communicated over the voice paging system, by word of mouth, or by security personnel using sirens or the voice amplifiers in their vehicles. Designated personnel known as area wardens are assigned responsibility for ensuring that personnel are evacuated from the area warden's assigned area or building or accounted for during evacuations. The following will allow for a safe, coordinated evacuation: • When an evacuation is announced, stop work • If possible and directed by the EAM, shut down designated operations that could contribute to further hazards, unless an "immediate" building evacuation is announced • Follow the voice-paging instruction or proceed to the closest building exit, unless blocked by hazards • Do not remain in the affected area, and assist injured personnel in leaving the area, if possible • Exit the facility through the security access points to the designated assembly area • Report to the designated assembly area • Be continually cognizant of wind direction (stay upwind) and emergency equipment • Do not reenter the fenced area of the INTEC, until the EAM authorizes reentry. During an evacuation, all personnel will remain in the designated assembly area, until given further instructions. The primary evacuation routes for the permitted units are depicted in the exhibits located at the end of this section. Alternative evacuation routes are

	through the nearest unobstructed emergency exit. **Evacuation Alarm** signal is an alternating tone-generated siren. **Fire Alarm** is announced over the INTEC voice paging system. **Take-Cover Alarm** is a steady tone-generated siren. This signal provides an emergency option to total INTEC evacuation**.**
G-8 Required Reports 40 CFR 264.56(j) and 40 CFR 264.56(i). 40 CFR 264.56(j) The owner or operator must note in the operating record the time, date, and details of any incident that requires implementing the CP. Within 15 days after the incident, he must submit a written report on the incident to the Regional Administrator. The report must include: (1) Name, address, and telephone number of the owner or operator; (2) Name, address, and telephone number of the facility; (3) Date, time, and type of incident (e.g., fire, explosion); (4) Name and quantity of material(s) involved; (5) The extent of injuries, if any; (6) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and (7) Estimated quantity and disposition of recovered material that resulted from the incident. 40 CFR 264.56(i) The owner or operator must notify the Regional Administrator, and appropriate State and local authorities, that the facility is in compliance with paragraph (h) of this section before operations are resumed in the affected area(s) of the facility.	**G-8 Required Reports** Any fire, explosion, or unplanned release of hazardous or mixed waste or hazardous constituent requiring activation of the contingency plan will be reported by the DOE-ID in writing within 15 days to the EPA Region 10 Administrator. If appropriate, the DOE-ID will also provide a report to the Director of the Department of Environmental Quality. Such reports will include, as a minimum, the following: • Name, address, and telephone number of the facility owner/operator • Name, address, and telephone number of the facility • Date, time, and type of incident (such as fire, explosion, release) • Name and quantity of the material(s) involved • Extent of any injuries to personnel at the facility • An assessment of any actual or potential hazards to human health or the environment, as applicable • Estimated quantity and disposition of material recovered from the incident (includes fire fighting materials, such as water, foam, adsorbents/absorbents, etc.). In accordance with IDAPA 58.01.05.008 [40 CFR 264.56(I)], the DOE-ID will notify the Director of the Department of Environmental Quality and the EPA Region 10 administrator that: • The permitted units are in compliance with requirements for the cleanup of areas affected by the emergency and that the emergency equipment used in the emergency response has been cleaned or replaced and is fit for the intended use, before the resumption of waste management activities • The permitted units have experienced a fire, explosion, spill, or release of hazardous waste or hazardous waste constituents or an emergency resulting in a release of a hazardous substance included in 40 CFR 302.4 that could threaten human health or the environment outside the INTEC • The contingency plan will be activated, and the EAM will ensure that local authorities are notified in writing.

Table G-1. Emergency response equipment available at the CSSF.

Emergency Equipment	Location	Capabilities
Fire control		
Portable fire extinguisher (ABC or CO_2)	Inside the personnel door of each CSSF	Use during incipient stage of fire (10–60-sec discharge time)
Emergency Communication/Alarm System		
Manual fire alarm boxes	Located at each CSSF	Summon INL Fire Department
Telephones	Located at each CSSF	On-Site / Off-Site communications
Two-way radios	Used by field personnel	On-Site communications
Sitewide evacuation alarm	Alarm may be sounded throughout the INTEC	Provides immediate notice of evacuation
Internal voice paging system	Located throughout the INTEC	Provides general and emergency information

Maps and drawings removed from the electronic version and are available for review in the hard copy version

RCRA PART B PERMIT APPLICATION

FOR THE

IDAHO NATIONAL LABORATORY

Volume 22
Idaho Nuclear Technology and Engineering Center

Calcined Solids Storage Facility

Attachment 5 - Section H
Personnel Training

February 2006

CONTENTS

TABLE

H. PERSONNEL TRAINING

This section outlines and describes the core-training program for personnel involved in the management of hazardous and mixed waste at treatment, storage, and disposal (TSD) units at the Idaho Nuclear Technology and Engineering Center (INTEC), including units addressed in this permit.

A training program has been implemented to ensure that personnel involved in the management of hazardous and mixed waste at INTEC TSD units receive training consistent with the requirements of IDAPA 58.01.05.008 and 58.01.05.012 (40 CFR Parts 264.16 and 270.14). The training program is designed to ensure that personnel are trained to hazardous waste management procedures including, but not limited to, inspections, normal operations, emergency procedures, equipment, systems, and contingency plan implementation. Duties performed at the TSD units will be performed in a safe, disciplined, and professional manner.

H-1. Outline of Training Program [IDAPA 58.01.05.008 and 58.01.05.012; 40 CFR 264.16(a)(1) and 270.14(b)(12)]

Training programs are developed using a systematic approach to training (SAT). The SAT process involves:

- Analyzing tasks to determine the training requirements
- Designing a plan to satisfy the training requirements
- Developing plans and all supporting training materials
- Implementing the training plans
- Evaluating the effectiveness of the training and making recommendations for changes.

The SAT process is used to determine the training requirement for each task listed in Table H-1. The training program for TSD unit personnel involves a combination of formal [classroom, group instruction, on-the-job training (OJT), etc.] and informal training sessions (one-on-one instruction, required reading, etc.). The training requirements, lesson plans, and OJT guides for each task and position are identified in Table H-1.

Programs prepared by the TSD training organization provide the core requirements to be completed by the individual during training. As the program is satisfactorily completed, it is verified and documented in their training records.

The training program is upgraded as needed in response to changes in job descriptions, job reassignment, process or procedural changes, technological changes, or implementation of new regulatory requirements that affect TSD unit operations. Training program revisions for specific TSD units are approved by the training director and the job analysis data is updated to reflect the changes in the training requirements.

TSD unit management works with subject matter experts to identify personnel training requirements. The TSD unit training organization (1) schedules and/or provides the training, (2) revises and updates training material as needed, and (3) maintains training documentation. The TSD unit training organization maintains individual training records for TSD unit employees.

H-1a. Job Tasks [IDAPA 58.01.05.008; 40 CFR 264.16(d)(1), 264.16(d)(2)]

The job tasks for personnel involved with hazardous waste management at INTEC TSD units are included in Table H-1 "Minimum Training Matrix for TSD unit Personnel." Personnel are trained to those sections of the permit, which are pertinent to their specific job assignments.

Security Guards – The Security personnel are not stationed at the permitted units nor are they involved in the management or handling of the waste. Security personnel receive training from the security organization relative to their positions and the facilities they serve. Therefore, training of security personnel is not discussed further in this section.

On Scene Commander – is the Idaho National Engineering and Environmental Laboratory (INL) Fire Department Chief. The INL firefighters serve the INL in fighting fires and containing major spills, including spills of waste from waste management units. The INL Fire Department conducts a self-contained training program for their personnel, which includes procedures for handling fires and spill emergencies involving hazardous materials and hazardous mixed waste at the INL. Therefore, training of firefighters is not discussed further in this section.

Emergency Director – is trained on the INL (Site wide) Emergency Plan/Resource Conservation and Recovery Act (RCRA) Contingency Plan or Industrial Safety and Hygiene Program as part of his/her duties. The ED will be informed by the Emergency Action Manager (EAM) or facility personnel at INTEC. Therefore, training of the ED is not discussed further in this section.

H-1b. Training Content, Frequency, and Techniques [IDAPA 58.01.05.008; 40 CFR 264.16 and (d)(3)]

The TSD unit training program consists of a combination of classroom instruction and OJT. Additionally, TSD unit employees receive new employee orientation and training. Employees working at or assigned as part-time/frequent visitor to Site facilities are required to complete annual facility access training and general employee radiation training (GERT) unless they are currently trained as radiation workers.

The initial training includes a general orientation of INL and TSD unit procedures, including evacuation and alert procedures, training requirements, and emergency equipment locations. The initial training provides TSD unit personnel with training commensurate with their job assignments in the following areas:

- General description of the INTEC
- Job-related procedures, policies, and instructions
- Radiological health and safety program
- Fire protection program
- Hazards associated with the TSD unit.

RCRA training is conducted annually for INTEC TSD unit employees to address changes that have occurred, including such topics as permit status, permit requirements, contingency and inspection plan implementation, and hazardous waste management procedures for the TSD unit(s) to which they are assigned.

The following major knowledge areas are included and evaluated based on job position and formal criteria identified in the job analysis:

- RCRA requirements as they relate to INTEC unit operations
- Hazardous materials
- INTEC TSD unit systems and components (including waste treatment processes and operations)
- Normal operating procedures and shutdown procedures
- Emergency or off-normal operating procedures
- Inspections and equipment maintenance

- Occupational Safety and Health Administration (OSHA) and related health and safety requirements
- INTEC TSD unit and operational/administrative procedures.

Personnel whose qualifications have been verified before beginning work perform TSD unit operation and maintenance.

Employees may be given written and/or oral examinations, operational evaluations, and reviews to ensure that they are adequately trained relative to their job tasks. Results of examinations, written or oral evaluations, and reviews are documented. All completed qualification standards, checklists, examinations, written evaluations, and documented oral evaluations are maintained in each individual's training record.

Table H-1 shows the task training requirements for TSD unit personnel involved in hazardous/mixed waste operations at INTEC TSD units addressed in this permit. TSD unit personnel may receive additional training beyond that shown in Table H-1. This training is documented and included in employee training records.

Occasionally, TSD unit personnel attend training classes conducted external to the INL or conducted at the INL by non-INL subcontract personnel. In order to verify an employee's attendance at these training courses, a copy of the class certification or other documentation is maintained in the individual’s training record.

H-1c. Training Director [IDAPA 58.01.05.008; 40 CFR 264.16(a)(2)]

For all TSD units the training director functions in conjunction with his/her designee(s) to insure that all segments and responsibilities associated with the training program are accomplished. The training director provides overall leadership and management direction to the TSD unit training organization. The director's duties include the following:

- Provide direction to the TSD unit training organization
- Ensure that performance of training personnel is evaluated

Table H-1. Minimum training matrix for TSD unit personnel.

Task	Audience	Initial Employee Training	Rad Training [1]	24 hour OSHA [1]	Annual Training	Applicable Sections of RCRA Permit [2]
High-level waste (HLW) operations personnel that perform TSDF operations, or supervise those operations, and are exposed to the hazards of the TSDF. These employees have duties that may bring them into contact with hazardous/mixed waste. Therefore, these employees are required to complete 24-hr HAZWOPER Qualification.	HLW TSDF Worker	X	X	X	X	C, D, F, G
HLW operations personnel that perform TSDF operations, or provide system-specific operational direction (i.e., facility operations managers, facility system engineers, facility environmental representatives). These employees are not directly exposed to the hazards of the TSDF but must be cognizant of the RCRA-related requirements for HLW (for instance, these employees are not required to wear personal protective equipment (PPE) and are not required to complete 24-hr HAZWOPER).	HLW Incidental TSDF Worker	X	X		X	C, D, F, G
Employees who enter TSDF areas unescorted and provide support functions that may bring them into contact with hazardous/mixed waste at the TSDF. These employees are required to complete 24-hr HAZWOPER Qualification. Examples of work activities include radiological surveys, maintenance planning, life safety systems, and surveillance. Examples of workers that may be included are Crafts, Radcon, Quality Inspector or Technicians, Facility Engineers, Life Safety System Engineers, EAMs, Waste Handlers, and Subcontractors. (In the HLW facilities, the TSDF boundary is usually interpreted to mean within the Radiological Buffer Areas).	INTEC TSDF Support Worker	X	X	X	X	F, G
Employees who enter TSDF areas unescorted and provide support functions and **are not** directly exposed to the hazards of the TSDF (for instance, these employees are not required to wear PPE and are not required to complete 24-hr HAZWOPER). Examples of workers that may be included are Environmental, Safety, and Health (ES&H) Support Engineers, Hygienists, Support Engineers, Planners, Senior Supervisory Watch (SSW), and Quality Engineers. (In the HLW facilities, the TSDF boundary is usually interpreted to mean within the Radiological Buffer Areas).	INTEC TSDF Incidental Support Worker	X	X		X	F, G

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Table H-1. Continued

Task	**Audience**	**Initial Employee Training**	**Rad Training** [1]	**24 hour OSHA** [1]	**Annual Training**	**Applicable Sections of RCRA Permit** [2]
Employees who perform Decon facility cell inspections and debris treatment activities. Decon personnel that perform TSDF operations, or supervise those operations, and are exposed to the hazards of the TSDF. These employees have duties that may bring them into contact with hazardous/mixed waste. Therefore, these employees are required to complete 24-hr HAZWOPER Qualification.	HLW Decon Technician, HLW Decon Tech Leads	X	X	X	X	C, D, F, G
Waste Disposition Services Technical Staff who perform support functions for TSDFs. These employees have duties that may bring them into contact with hazardous/mixed waste. Therefore, these employees are required to complete 24-hr HAZWOPER Qualification.	WDS TSDF Worker	X	X	X	X	C, D, F, G

1. Personnel who are not exposed to the hazards of the regulated units may not require this training
2. Personnel receive training related to the permit section as appropriate to their job function.

Section C- Waste Characterization
Section D – Process Information
Section F – Procedures to Prevent Hazards
Section G – Preparedness, Prevention, and Contingency Plan

- Approve TSD unit training program
- Ensure that all program objectives and requirements are satisfied and that the training program meets the requirements of IDAPA 58.01.05.008 (40 CFR 264.16) and 29 CFR 1910.120.

The training director or his/her designee(s) is responsible for ensuring that TSD unit personnel are trained in waste management and contingency plan implementation, including emergency procedures, and that they receive training appropriate to their tasks. The training director also reviews documentation, including feedback from audits and appraisals, operating logs, emergency exercise critiques, and employee recommendations, for possible inclusion into the TSD unit training programs.

H-1d. Relevance of Training to Job Tasks [IDAPA 58.01.05.008; 40 CFR 264.16(a)(2)]

Individual training program profiles are prepared for each TSD unit position that requires a formal training program.

At a minimum, each individual training program profile identifies the following:

- Job description
- Qualifications
- Training requirements.

Profiles typically identify qualification requirements. Occasionally, a position may require specialized training. Special-case training is documented in individual training records. Profiles include requirements for hazardous/mixed waste management or handling and emergency response training.

Supervisors have the responsibility for evaluating training requirements for TSD employees. These supervisors receive additional training in how to conduct and evaluate OJT.

Individuals who demonstrate an equivalency for specific requirements or prerequisites identified in the training profile may be exempted from requirements in accordance with established procedures. The training director must approve exemptions/equivalencies. Each exemption/equivalency is granted in writing and documented in the individual's training record.

H-1e. Training for Emergency Response [IDAPA 58.01.05.008; 40 CFR 264.16(a)(3)]

Emergency response training is provided to all personnel assigned to or associated with TSD units, including specialized training for employees with specific emergency action responsibilities, such as the EAM and Emergency Response Organization (ERO) personnel. The following presents an overview of the emergency response training.

General emergency response training of TSD unit ERO personnel includes training on the INL EP/RCRA CP that covers the following topics:

- Spill Control Plan
- Evacuation/accountability
- Emergency drill/exercise
- RCRA
- Emergency Plan Implementing Procedures
- Emergency preparedness
- Incident command system
- Inspection and repair of facility emergency monitoring equipment.

ERO members respond to emergency events. ERO members receive initial training and annual requalification training, in addition to training provided to general employees. Training of ERO members is outlined by position in company procedures. All INTEC employees receive general employee emergency response action training.

H-2. Implementation of Training Program [IDAPA 58.01.05.008; 40 CFR 264.16(b) and 40 CFR 264.16(c)]

After completion of new employee orientation, designated employees enter a training program specific to their job assignment. Persons holding qualifications are retrained and reevaluated as mandated by procedures. Job assignments required for the completion of a training program have time and performance limitations that must be satisfied to meet program qualification criteria.

RCRA training is completed within the first six months of the individual's employment or assignment, and at least annually thereafter, for positions involving TSD unit operations. Throughout the training program and until completion, employees do not perform their job duties unsupervised.

H-3. Training Records [IDAPA 58.01.05.008; 40 CFR 264.16(d)(4) and (e)]

Individual training records are maintained for personnel assigned to TSD units. Training records include documentation of completed training, such as class rosters, signed checklists, completed exams, database printouts from additional training classes attended, and other documents verifying training. The original training records are maintained by the presenting organizations, which enter course completion information into a database. A hard copy of this information is also entered into the individual's training record.

The training records include the names of employees filling each TSD unit position. Job tasks and associated training requirements for each TSD unit are found in Table H-1.

Individual training records include, as a minimum, the following:

- Initial training and retraining programs
- Attendance records of training received
- Results of exams, walk through, and job performance assessments related to certification.

Training records for current employees at each TSD unit are maintained until closure of the unit or the employee terminates or transfers to a non-TSD unit position. The training records of terminating employees are maintained at the TSD unit for a minimum of three years from the date the employee last worked at a TSD unit. The training records for TSD unit employees who transfer to a non-TSD unit position within the company are forwarded to the employee's new organization, where they continue to be available for at least three years.

RCRA PART B PERMIT APPLICATION

FOR THE

IDAHO NATIONAL LABORATORY

Volume 22
Idaho Nuclear Technology and Engineering Center

Calcined Solids Storage Facility

Attachment 8 - Section I
Closure and Post Closure Requirements

February 2006

CONTENTS

TABLE

I. CLOSURE AND POSTCLOSURE REQUIREMENTS

This closure plan specifies Idaho Nuclear Technology and Engineering Center (INTEC) performance standards and procedures for the waste management units addressed in this application. The activities and closure performance standards described in this plan apply only to Hazardous Waste Management Act (HWMA)/Resource Conservation and Recovery Act (RCRA)-regulated wastes. Prior to initiation of closure, all hazardous waste will be removed from the units and disposed of according to applicable laws and regulation.

The closure performance standards for decontaminating equipment and components correspond to applicable regulatory guidelines. Closure activities will address contaminated process equipment and building components to be salvaged as scrap metal or other recyclable material; contaminated process equipment and building components to be reused for non-waste management purposes; contaminated process equipment and building components to be disposed of as hazardous waste debris; and residues/wastes resulting from decontamination activities.

I-1. CLOSURE AND POSTCLOSURE REQUIREMENTS [IDAPA 58.01.05.008 and 58.01.05.012; 40 CFR 270.14(b)(13), 264.111, and 264.112(a)(1) and (2)]

This closure plan describes the procedures to be used to remove remaining waste residues and to decontaminate process equipment and building components to achieve closure performance standards specified in the Idaho Administrative Procedures Act (IDAPA) 58.01.05.008 [40 Code of Federal Regulation (CFR) 264.111]. The units addressed in this permit application will be operated and closed to prevent releases to the environment. Postclosure escape of hazardous waste constituents to the ground, surface water, or atmosphere will be nonexistent. Therefore, continued maintenance activities after closure is completed will not be required. This closure plan satisfies the requirements of IDAPA 58.01.05.008 (40 CFR 264.111 through 264.115 and applicable parts in 40 CFR 264.197).

I-1a. Closure Performance Standards (IDAPA 58.01.05.008; 40 CFR 264.111)

The closure process is designed to:

- Minimize the need for further maintenance
- Control, minimize or eliminate to the extent necessary to protect human health and the environment, postclosure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere
- Complies with the closure requirements of applicable portions of 40 CFR 264.

The closure performance standards for the units are in accordance with applicable portions of IDAPA 58.01.05.006 through 58.01.05.012 (40 CFR 262 through 270). HWMA/RCRA closure activities are considered precursor efforts to the ultimate facility deactivation and decommissioning (D&D). Technical approaches to this ultimate facility D&D will have practical bearing on the appropriate approach to HWMA/RCRA-regulated closure. At this time, the Department of Energy Idaho Operations Office (DOE-ID) approach to facility D&D for the Calcined Solids Storage Facility (CSSF) has not been determined. Therefore, this plan presents assumptions based on past and current HWMA/RCRA-regulated closure and D&D activities at the INTEC. This integration of HWMA/RCRA closure activities with subsequent D&D activities is reflected in Number 3 below as it relates to contaminated process equipment and building components that would remain in place and undergo subsequent facility D&D. Performance standards, probable scenarios affecting process equipment, building components, and decontamination residuals are indicated below:

1. Contaminated process equipment and building components salvaged as scrap metal/materials will be decontaminated as described in Section I-1d. Process equipment and building materials will be decontaminated in a manner and degree as specified by the recycle scrap metal/material vendor in conformance with their recyclable material acceptance criteria. To attain the closure performance standard, the subject process equipment and building components may be subjected to decontamination techniques such as sweeping, brushing, scraping, wiping, or rinsing. The selected means of decontamination will be material-specific and dependent on the effectiveness in attaining the contracted recyclable materials vendor acceptance criteria, minimization of the potential spread of contamination, and minimization of decontamination wastes. All decontamination media and other

residuals generated from this closure activity will be managed as identified in Section I-1d of this permit application.

2. The performance standard for reusable process equipment and building components will be a degree of decontamination consistent with the intended "postclosure" use of the process equipment or building components as determined by INL-accepted industrial hygiene and health physics protocols and guidelines. The need to decontaminate room, vault or equipment surfaces will be determined initially by reviewing the operating record for evidence that hazardous waste or hazardous constituents came into contact with the structure or equipment in question. In addition to the operational record review, visual observation will be completed by using visual aids such as mirrors, remote cameras, etc.

3. Other than internal surfaces of tank systems and ancillary equipment, the performance standard for contaminated process equipment and building components that would remain in place and undergo subsequent facility D&D will be a level of chemical or physical decontamination required to render the equipment or structural surfaces "clean," analogous to that specified and identified under IDAPA 58.01.05.011 (40 CFR 268.45). The degree of decontamination will be based on how extensively the equipment or structure was used in waste treatment operations, and the likelihood that it came into direct contact with the hazardous waste. An assessment of the facility operating record and spill records will be conducted to determine the extent of potential waste contamination. Equipment and structures that have documented releases, waste-related stains, or known contact with waste materials will be decontaminated, using an appropriate decontamination solution/method and/or be decontaminated using a method analogous to an alternative treatment technology identified in IDAPA 58.01.05.011 (40 CFR 268.45).

In the event that this primary performance standard is not achievable upon the initial decontamination campaign, the appropriateness of the decontamination media will be verified and a second decontamination effort will be undertaken, potentially with different and/or more aggressive chemical agents or physical removal methods. If upon completion of the second decontamination campaign, apparent waste-related stains remain greater than 5% of the equipment or structural surface area, an equipment/building surface sampling regimen will be considered. Design and implementation of this sampling regimen and corresponding data quality objectives and performance standard will be presented to the Idaho Department of Environmental Quality (DEQ) as an amendment to the closure plan. Depending on the timeframes involved, development, DEQ approval and implementation of this sampling regimen would likely require an extension of the timeframe to complete closure

pursuant to IDAPA 58.01.05.008, 40 CFR 264.113(a) and 264.113(b). It is anticipated that results from such a sampling effort would be utilized to assess the worker, nonresidential scenario risk posed by residual hazardous constituent contamination, such that the concentrations of contaminants remaining in the units would not pose a risk to human health and the environment.

4. The performance standard for contaminated process equipment and building components to be managed as hazardous debris will be the alternative treatment standards for hazardous waste debris in IDAPA 58.01.05.011 (40 CFR 268.45), or the equipment/components will be managed as hazardous waste, per IDAPA 58.01.05.006 through .012 (40 CFR 262 through 270). Contaminated process equipment and building components will be managed as hazardous waste debris, either at an INL or off-Site treatment, storage, or disposal (TSD) unit. This may entail decontamination until the standard for attaining a "clean debris surface" is achieved, as verified by visual inspection of the contaminated surface. Clean debris surface means that the surface, when viewed without magnification, shall be free of visible contaminated soil and hazardous waste except that residual staining from soil and waste, consisting of light shadows, slight streaks, or minor discoloration. Soil and waste in cracks, crevices, and pits may be present, provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of surface area. Table I-1 summarizes potential physical and chemical extractive treatment technologies to be employed and the corresponding type of process equipment or building components. Following decontamination and/or equipment removal, the area will be swept clean of debris. Materials will be removed and containerized. All collected decontamination media and collected dirt and debris will be sampled, analyzed, and managed accordingly. An alternative to the described closure activities that may be exercised at the time of closure is dismantling, packaging, manifesting as hazardous waste, and transport of contaminated equipment to be disposed of to an interim status/permitted TSD unit.

5. Decontamination media, rinsates, residues, and used Personal Protective Equipment (PPE) generated from the decontamination of recyclable scrap metal/material, reusable equipment, and hazardous waste debris will be characterized per the Waste Analysis Plan (WAP) of this permit application. As detailed in Section C, characterization will be determined by acceptable process knowledge or sampling and analysis. Management of mixed waste streams will, as necessary, be addressed in the INL Site Treatment Plan and may include incineration, stabilization, or other acceptable means of treatment, as necessary. All characterization activities performed in conjunction with this closure action will be in accordance with the current WAP for this permit application.

Table I-1. Potential Unit Closure Debris Treatment Technologies.

Component or Subsystem	Extractive or Immobilization Treatment Technology[1]
Ancillary equipment and surfaces	High-pressure steam and water sprays,[2] abrasive blasting, CO_2 blasting
Structural components (metal wall panels, floor surfaces, structural beams, ceiling materials, etc.)	CO_2 blasting, abrasive blasting, high-pressure steam and water washing, spraying,[2] spalling
Miscellaneous metal ducting	CO_2 blasting, abrasive blasting, high-pressure steam and water washing, spraying[2]
Tank Storage Units and Affected Sumps	
Tanks	Not classified as debris, see Section I-1d(2)
Affected ancillary equipment and surfaces, secondary containment devices, including sump surfaces	High-pressure steam and water sprays,[2] abrasive blasting, CO_2 blasting

1. From IDAPA 58.01.05.011 (40 CFR 268.45, Table 1).
2. Would require an Equivalent Technology Approval per IDAPA 58.01.05.011 [40 CFR 268.42(b)].

I-1b. Partial Closure Activities [IDAPA 58.01.05.008; 40 CFR 264.112(a)(1)]

The Bin Sets occupy 7 separate vaults. Each Bin Set will be closed separately. This would constitute a partial closure for this permit application. Therefore, partial closure activities would be preceded by notification of the DEQ and undertaking an amendment to the closure plan pursuant to IDAPA 58.01.05.008, 40 CFR 264.113(a) and 264.113(b).

I-1c. Maximum Waste Inventory [IDAPA 58.01.05.008; 40 CFR 264.112(b)(3)]

This Part B permit application includes the Part A hazardous waste permit application for units in this application. The Part A permit application indicates the maximum potential waste inventory for units. In addition, the operating record for each unit will identify the occurrence of waste spills, if any, over the operating life, and the measures taken to mitigate the spill.

I-1d. Inventory Removal and Disposal or Decontamination of Equipment, Structures, and Soils (IDAPA 58.01.05.008; 40 CFR 264.111, 264.112, and 264.114)

Selection of specific process equipment and building components, and the degree of decontamination efforts, will be based on whether the equipment and structures have come into direct contact with waste, whether or not there is visual evidence of waste-related staining or streaking, the nature of constituents or contaminants present, and whether the equipment and structures will be managed for recycle, reuse, or disposal as hazardous debris. Due to the design and integrity of the bins at closure,

releases to the environment are unlikely. As a result, disposal of contaminated soils pursuant to this permit application is not anticipated. Section I-1a., Closure Performance Standards (IDAPA 58.01.05.008; 40 CFR 264.111), addresses the protocols for achieving the closure performance standards or management processes for the following groupings of process equipment, contaminated structures and residues:

- Contaminated process equipment and building components to be salvaged as scrap metal/materials
- Contaminated reusable process equipment and building components
- Contaminated process equipment and building components that would remain in place and undergo subsequent facility deactivation and decommissioning
- Contaminated process equipment and building components to be managed as hazardous debris
- Decontamination media, rinsate, residues, and used PPE.

The selected means of decontamination will depend on effectiveness in attaining the closure performance standard, minimization of the potential spread of contamination, and minimizing the generation of decontamination waste. Room or area surfaces contaminated during decontamination of equipment will be closed in the same fashion. If used, fluids from equipment decontamination using an ancillary pumping system will be collected in containers and stored within the work area. Spill booms, spill control pillows, swabs, or other absorbent material(s) may also be used to contain the residual fluids and facilitate removal.

Process Equipment and Building Components – Selection of Potential Debris Treatment Technologies Employed

As indicated in Section I-1a, Closure Performance Standard, dismantled contaminated process equipment and building components to be disposed of as solid waste will be managed in accordance with the treatment standards for hazardous debris in IDAPA 58.01.05.011 [40 CFR 268.45(a)]. In general, hazardous debris must be treated for each "contaminant subject to treatment," as defined in IDAPA 58.01.05.011 [40 CFR 268.45(a)], using the technology or technologies specified in IDAPA 58.01.05.011 (40 CFR 268.45, Table 1). The proposed debris treatment and waste storage activities will involve prohibited listed wastes and metal-bearing characteristic wastes. Given this fact, debris treatment conducted as part of facility closure will necessarily consider prohibited listed wastes and TCLP constituents subject to treatment, and the corresponding treatment standards indicated under IDAPA 58.01.05.011 (40 CFR 268.45). While not all-inclusive, Table I-1 indicates the process

equipment, building component or subsystem, and the probable corresponding physical and chemical extractive debris treatment technology description. Any contaminant restrictions relative to application of technologies other than the best demonstrated available technology would be presented to the Idaho DEQ Director for approval, prior to implementation.

Alternate Treatment Technology Selection Process

Prior to implementation of a given alternative treatment technology specified in Table I-1 or otherwise, a comprehensive engineering evaluation will be made of the given form of debris (such as metal versus plastic), the known hazardous constituents, radiological considerations, industrial hygiene concerns, and any other factors that may affect technology selection. If, based on this evaluation, a suitable alternative treatment technology is not clearly indicated, a treatability study of one or more technologies may be undertaken on that class of debris waste. Based on the initial engineering evaluation or the successful identification of a technology via treatability studies, an alternative treatment technology will be selected for implementation. In all cases, the performance standard for any technology implemented (specified on Table I-1) will be the clean debris surface standard under IDAPA 58.01.05.011 (40 CFR 268.45).

Vault Surfaces

Contaminated vault surfaces as indicated by an assessment will be cleaned of dirt and other residuals, as necessary. Materials will be removed and containerized, followed by decontamination to attain an appearance analogous to the "clean debris surface."

Transfer Areas and General non-Waste Handling Equipment

Equipment and structures that have no documented releases, visible signs of release, or known contact with waste will be decontaminated using customary radiological decontamination practices or standard housekeeping procedures. At a minimum, equipment and structures will be wiped down or mopped with a suitable decontamination medium. Portions of the floor with no known contact with hazardous waste will be mopped or wiped down. Residues generated by this general cleaning or decontamination will undergo a hazardous waste determination in accordance with the current WAP for this permit application. Environmental Protection Agency (EPA) SW-846 or equivalent methodologies will be used, matching contaminant of concern with appropriate sample type, quantity, and analysis.

Hazardous Residue Management

Process equipment and building components that undergo decontamination on-Site will be decontaminated in appropriate areas within the INTEC as necessary, or at other approved INL facilities available at the time of closure. If used, fluid resulting from decontamination activities will be contained within the work area and collected in containers using an ancillary pumping or other system as needed. Spill booms, spill control pillows, swabs, or other absorbent materials may be used to contain the residual fluids and facilitate removal. Following decontamination and/or equipment removal, the area will be swept clean of dirt and residuals. Materials will be collected and containerized. Recovered decontamination media and collected dirt and residuals will be characterized in accordance with Section C of this permit application and managed according to the results of the analysis. When sampling and analysis is required, EPA SW-846 or equivalent methodologies will be used, matching contaminant of concern with appropriate sample type, quantity, and analyses. An alternative to the described closure activities that may be exercised at the time of closure is dismantling, packaging, and transport of contaminated equipment to be disposed of at an on-Site or off-Site RCRA interim status or permitted facility for required treatment and subsequent disposal.

All of the indicated waste, residue, and decontamination materials and/or rinsates will be containerized and sampled as described and stored in INL HWMA/RCRA-compliant facilities as "Unknown-Pending Sampling and Analysis," until analytical results indicating the hazardous classification, if any, of the waste is received. In addition, all disposable PPE, other disposable equipment, and all other wastes generated during closure activities will be containerized and characterized in accordance with the current WAP. When sampling and analysis is required, EPA SW-846 or equivalent methodologies will be used, matching contaminant of concern with appropriate sample type, quantity, and analysis. Before being moved from any areas undergoing decontamination, reusable PPE will be decontaminated by removing residual materials from booties, gloves, anti-C's, and spraying, washing, and scrubbing all outside protective clothing surfaces. Treatment and disposal of these waste streams will be addressed in the INL Site Treatment Plan and may include incineration, stabilization, or other acceptable methods of treatment, as necessary.

I-1d(2) Closure of Tank Systems [IDAPA 58.01.05.008; 40 CFR 264.197]

Tanks addressed by this closure plan located in CSSFs 1–7. The tank systems will be considered "clean closed" when the following methods are completed to meet the closure performance standards:

- Wastes are removed from the tanks, pipelines, ancillary equipment, and surfaces of the system.

- If removed from the facility and managed as (1) salvageable scrap metal/materials, or (2) reused as process equipment, the performance standard is that specified in Section I-1a above.

- If left physically intact, in place and not managed as hazardous waste debris, the tanks, piping, ancillary equipment, and building interiors associated with these tank systems are decontaminated in a manner to achieve the performance standard. Probable decontamination solutions may include one or more acidic or alkaline decontamination solutions, or appropriate combinations of the two.

In verifying the effectiveness of decontamination activities, the Management and Operation (M&O) contractor will make use of the following measurements and determinations:

(1) **Levels of removable hazardous chemical constituents on swipe samples taken from decontaminated surfaces**. Swipes will be moistened with mildly acidic (pH 3 to 5) solution, appropriate for removing waste constituents adhering to the tank system surfaces. Closure of the tank systems will be considered successful when concentration of hazardous constituents smear samples do not exceed two times the method detection limit (as defined in the appropriate procedure of Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, current edition).

(2) **Levels of hazardous chemical constituents and hazardous characteristics in spent decontamination solutions**. Closure of the tank systems will be considered successful when the concentration of hazardous constituents in spent decontamination solutions do not exceed the risk-based action levels. Spent decontamination solutions may be sampled downstream at a suitable storage tank.

(3) **Radiological surveys of tank exterior walls**. Radiological surveys will be taken of tank exterior walls to verify removal of the solid waste fraction, if any.

(4) **Boroscope or other visual determination methods**. Boroscope or other visual determination methods will be used for verifying removal of the solid waste fraction, if any.

I-1e. Other Closure Activities [IDAPA 58.01.05.008; 40 CFR 264.112(b)(5)]

No other activities such as groundwater monitoring, leachate collection, or run-on/run-off control are appropriate or planned for these units.

I-1f. Schedule for Closure [IDAPA 58.01.05.008; 40 CFR 264.112(b)(6)]

The Director of the DEQ will be notified in writing at least 45 days prior to the date that closure operations are planned to begin. The projected schedule for closure of these units is generalized as follows:

Activity	Day Completed
Initiate closure activities	Day 0
Complete equipment decontamination	Day 100
Complete surface decontamination	Day 140
Decontaminate tools, complete waste assessments, remove wastes	Day 160
Complete all closure activities	Day 180
Submit closure certification to the State of Idaho	60 days after completion of closure

I-1g. Extension for Closure Time [IDAPA 58.01.05.008; 40 CFR 264.113(a) and 264.113(b)]

Closure of these units is scheduled for completion within the prescribed 180-day period. No variance is requested at this time. If it is later determined that an extension for the closure time is necessary a permit modification request will be submitted to the Director of DEQ per IDAPA 58.01.05.012 (40 CFR 270.42).

I-1h. Certification of Closure [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.11(d) and 264.115]

An independent, registered professional engineer (PE), the M&O contractor, and/or DOE-ID will provide to the DEQ within 60 days of the completion of closure, a certification of closure for each unit in accordance with IDAPA 58.01.05.008 (40 CFR 264.115). The certification will state that each unit was clean closed in accordance with the approved closure plan. Final closure activities will be considered complete upon submittal of supporting documentation to the PE's certification and the certification of closure, and then written acceptance issued by the DEQ. These units will not be closed as a land disposal facility; therefore, a "Notice in Deed" and survey plat are not required.

I-2. Postclosure Plan [IDAPA 58.01.05.012; 40 CFR 264.197(b) and 270.14(b)(13)]

Since all hazardous or mixed wastes will be removed prior to closure and any residual hazardous chemical contamination will be removed during closure, a postclosure plan is not required. Also, there have been no releases to the environment that would require a contingent landfill closure plan.

I-3. Postclosure Notices [IDAPA 58.01.05.012; 40 CFR 270.14(b)(14)]

Since all hazardous and mixed wastes will be removed prior to closure and any residual hazardous chemical contamination will be removed during closure, postclosure notices are not required.

I-9. State Mechanisms

I-9a. Use of State Required Financial Mechanisms [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.14(b)(18) and 264.149]

I-9b. State Assumption of Responsibility [IDAPA 58.01.05.012 and 58.01.05.008; 40 CFR 270.14(b)(18) and 264.150]

The INL is owned by the U.S. Department of Energy; therefore, the facility is exempt from providing a closure cost estimate, financial assurance mechanism, meeting liability requirements, or compliance with state mechanisms under IDAPA 58.01.05.012 and 40 CFR 270.14(b)(18) and 264.149 and 264.150.